53 Number 1 January-March 2019 Pages 1-56

TRAIL & LANDSCAPE

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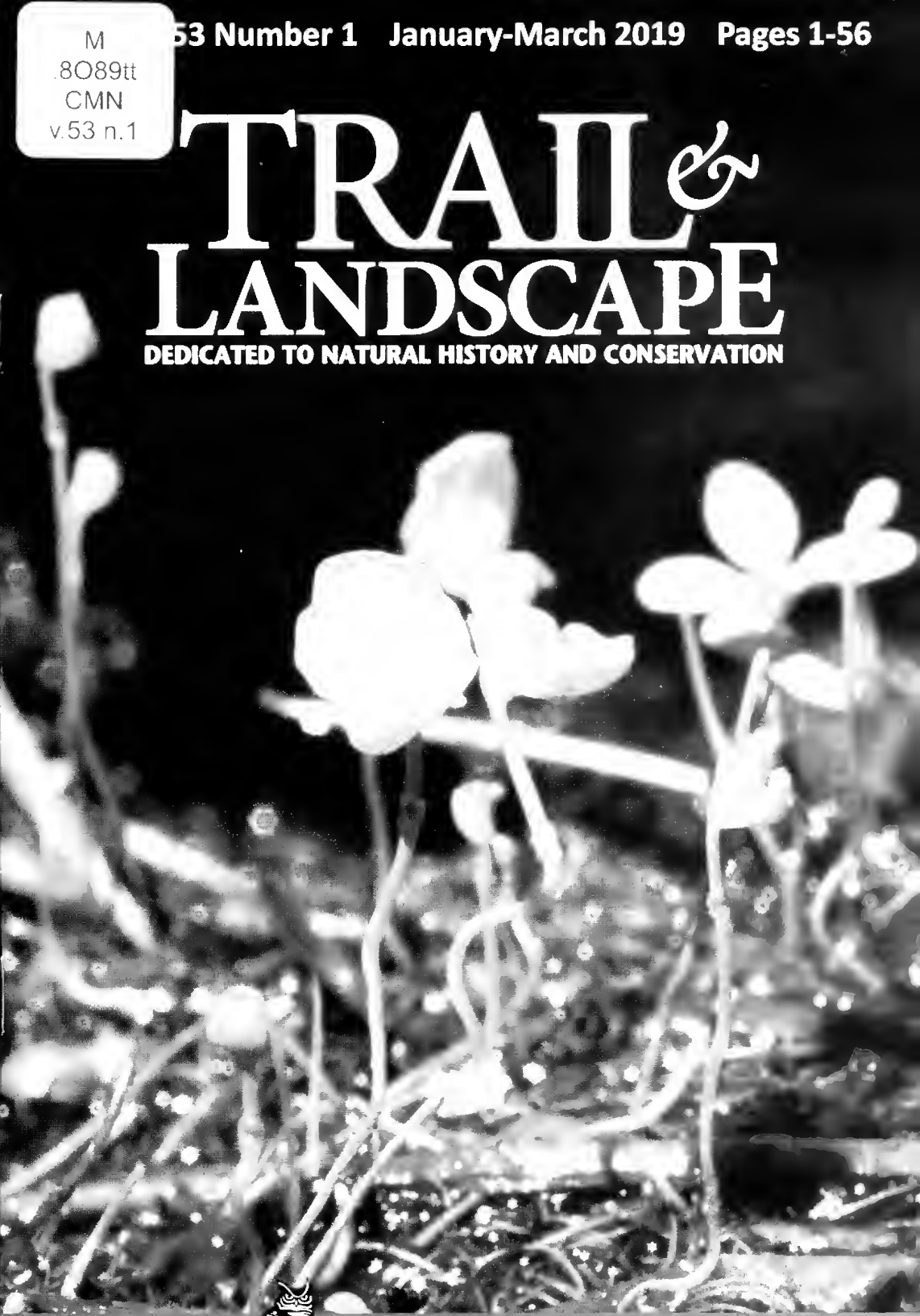

Ottawa Field-Naturalists' Club
Club des naturalistes d'Ottawa

TRAIL & LANDSCAPE

Publications Mail Registration # 09798

Ottawa Field-Naturalists' Club
Club des naturalistes d'Ottawa

— Founded 1863 (current incorporation 1879) —
Diane Lepage, President

Objectives of the Club: To promote the appreciation, preservation, and conservation of Canada's natural heritage; to encourage investigation and publish the results of research in all fields of natural history and to diffuse the information on these fields as widely as possible; to support and co-operate with organizations engaged in preserving, maintaining or restoring environments of high quality for living things.

Club Publications: *The Canadian Field-Naturalist*, a peer-reviewed science quarterly devoted to reporting research in all fields of natural history relevant to Canada, and *Trail & Landscape*, a quarterly journal/newsletter providing articles on the natural history of the Ottawa Valley and on Club activities.

Field Trips, Lectures and other natural history activities are arranged for members; see "Coming Events" in this issue.

Annual Membership Fees: Individual $40
Family $45
Student $20

Hard copy of *The Canadian Field-Naturalist* for OFNC members: $30 per year (volume)
Subscriptions to *Trail & Landscape* for libraries and institutions: $40 per year (volume)
Single copies of *Trail & Landscape*, Volume 51(3) onwards: $10 each (postage included)
Single copies of *Trail & Landscape*, up to Volume 51(2): $6 each (postage included)

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Views expressed in ***Trail & Landscape*** are not necessarily those of the OFNC.

On the cover:
Humped Bladderwort (*Utricularia gibba*), a carnivorous plant new for the City of Ottawa, found in the Crazy Horse Bog. Photo by Dan Brunton, July 21, 2018.
See "Crazy Horse Bog: A Small Gem on the Carp Ridge with a New Plant Species for the City of Ottawa" on page 17.

TRAIL & LANDSCAPE

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TRAIL & LANDSCAPE

Volume 53 Number 1, January-March 2019

Club Events

Welcome New Members

Ottawa Area

John R. Boos
Hannah Davis
Eric Dawson
C. De Neeve/J-M Weber
Ehren Edwards & Family
Ted Fairbairn & Family
Susan & Thomas Fernie
Gil-Patrick Finn
Sharla Foster
Emma Gaudreault
Anneke Golemiec
Judith Gustafsson
Leslie Hogan
Usha Kabilan
Jane Keeler & Family
Sherri Kelly & Family
Kenneth Kettley
Sami Khoury
Gillian King
Calvin Klatt
Leszek Kolodziejczyk
Pamela Laidler/Karen Legasy
Kathryn L. MacDonald
Deborah Macinnis
Ariel Marsh/Kevin Fields
Frank T. Martin & Family
Lloyd & Phyllis Mayeda
Yu Zhao Ni
Jessie & Chris O'Brien
Jean-Pierre Ollivier & Family
Eleanor Riley
Amanda Savoie
Daniel Shaw
Andrea Stokes
F. Taylor-Blanchette & Family
Sonia Williams/Bill Buchanan

Ontario

Eden Gerner
Matthew Mair
Luke Williams

New Brunswick

Richelle Martin

Henry Steger
Chair, Membership Committee
December 2018

Opportunity to Introduce New Canadians to Nature

Diane Lepage and Jakob Mueller

In early 2018, community volunteer Suman Gupta contacted the Ottawa Field-Naturalists' Club about running an event to introduce "New Canadians" (people recently arrived to Canada) to nature in the local area. The OFNC Board of Directors embraced the idea. Some of the members met with with Bonnie Thornington, Coordinator of the Friends of the Family & Peer Support Project, part of the Ottawa Community Immigrant Services Organization (OCISO) Settlement and Integration Program. After discussion and planning, we decided to propose a pilot outreach event. We called upon a number of Club experts from different fields, and many leaders were interested in the opportunity. Using their own website, OCISO advertised the possibility and found there was interest from many people.

When Suman first contacted the OFNC, she used personal examples to illustrate the challenge of initially connecting with nature. She described being limited by her parents' irrational fear of snakes... in Nova Scotia, where there are only small, non-venomous species. This struck a chord with Jakob, who takes a special interest in snake conservation, where human fear and loathing is a tremendous obstacle – whether transposed from a part of the world where venomous species are a potential hazard, or locally grown and borne purely of misinformation.

A group of New Canadians gathers in the parking lot at Mer Bleue before their exploration of the area with OFNC experts on September 16, 2018. Photo by Bonnie Thornington.

On September 16, nine OFNC leaders arrived at the Mer Bleue boardwalk trail to meet with Bonnie. There were about 30 participants of different age groups in attendance, including some Canadian volunteers. We grouped New Canadians with leaders and went in different directions. The walk lasted two hours, and we were able to show numerous fauna and flora to the participants.

OFNC president Diane Lepage talks to participants about field habitats and their potential insect visitors. Photo by Bonnie Thornington.

As Tony Beck and Jakob Mueller were leading a small group of newcomers down a trail, they were lucky enough to have an Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) cross their path. Jakob gently restrained the snake and picked it up, explaining what species it was, what defensive actions it was taking (spinning in a rolling motion and wiping stinky musk on his hand), and of course that it was harmless to people. As garter snakes typically do, it calmed down in less than a minute, and became docile and curious. It was the perfect segue to discuss the misplaced fear of snakes. Within a few minutes, a half-dozen New Canadians, all of whom had been in the country for less than a year, had gone from being apprehensive or outright afraid to being curious. Everyone took the opportunity to feel the snake (see, not slimy!) and some even held it.

The other participants explored the habitat to learn about entomology, botany, and the bog's richness. A number of dragonflies, beetles, and spiders were observed. The boardwalk and pond offered the possibility to observe the insectivorous plant, Sundew (*Drosera rotundifolia*), and the deciduous coniferous tree, Tamarack (*Larix laricina*).

Conservation depends on supportive public attitudes and perceptions, and it can often take a lot of hard work and time to make people more informed. We were very pleased that we were able to change some perceptions in short order that day.

A fine specimen of an eastern Ontario amphibian poses for a picture on the boardwalk. Photo by Bonnie Thornington.

Density of Adult and Larval Stages of Tiger Beetles at the Pinhey Sand Dunes

Henri Goulet, Oliver Giovannitti and Pete Dang
All photos taken in 2016 by Henri Goulet

A project supported in part by the 2015 OFNC Research Grants Program.

The project was started in summer 2015 and was mostly completed in September 2016. Some new information was added in the following two years.

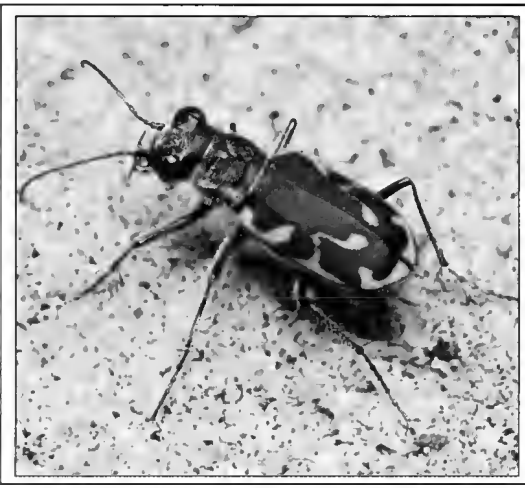
INTRODUCTION

In 2010, the Pinhey Sand Dunes were very small and a large portion was disappearing under the invading vegetation. Finding tiger beetles was becoming harder as the open sand habitat was becoming smaller. In 2011, with the support of the National Capital Commission and a two-year grant from the Ontario Trillium Foundation, the restoration of the sand dunes started. In 2011, we eliminated the main encroaching vegetation (Balsam Poplar and a low species of blackberry). In 2012, the surface was more than doubled with the removal of about 200 trees. The following year, in 2013, much effort was devoted to reducing the organic layer above the sand in areas where there were trees. Between 2014 and 2016, most of our efforts were channeled towards the control of several alien invasive species (e.g. Bladder Campion, annual grasses, crab grasses, quack grasses) and some native species (Milkweed and Bracken Fern). We also established a garden area with sand dune plants, observed their growth patterns in the hope of establishing them in the dunes, and we created three enclosed areas to greatly reduce the human impact.

In 2014 and 2015, we thought that we should start a research project to evaluate the impact of our restoration. We started with tiger beetles, looking at adults and larvae of three species normally occurring in this site. In September and October 2015, we looked at larval vertical shafts, as they were abundant and easy to spot. We could identify the smallest shaft (i.e., 1.4 - 2 mm in diameter) and the remaining larger shafts (i.e., 2.1 and 4 mm) as two species. During the summer of 2016, we concentrated our efforts on adults that could be easily identified in the field. We gathered data from transects from slightly different environments in the dunes to discover if there were preferences.

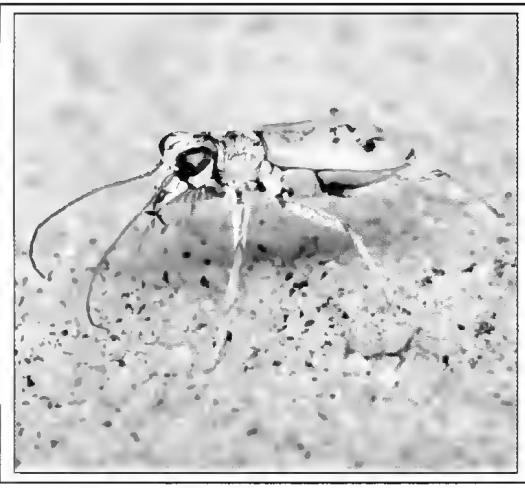
Brief summary of the biology of the species of tiger beetles in the Pinhey Sand Dunes

Cicindela scutellaris lecontei Haldeman
Adults, also known as Festive Tiger Beetles, are found from late April to July, rarely in August (Goulet 1983). The new generation of adults can be found again in late August to September (Leonard and Bell 1999). Larval stage insects take two years to develop (Acorn 2001). Adults are commonly seen mating in May and June. Females oviposit and first instar larvae emerge during this period. All larval instars overwinter and are seen in the spring of the following year. The third instar larvae pupate in the summer of the second year and new adults emerge in late August. The new adults overwinter, reproduce and mate in the spring, then die in the summer.



Cicindela formosa generosa Dejean
Adults, also known as Big Sand Tiger Beetles, have a life cycle very similar to that of *Cicindela scutellaris lecontei* above.

It is a significant predator of many insects, especially tiger beetles. *Ellipsoptera lepida* (below) is apparently its favourite snack.



Ellipsoptera lepida Dejean
Adults, also known as Ghost Tiger Beetles, are found from late June to September (Goulet 1983). They are most often seen from late June to late September but are most common in July (Leonard and Bell 1999). The larvae take two years to complete development (Acorn 2001). Females oviposit and first instar larvae emerge in July, which are seen until early November. All larval instars overwinter. In spring, larvae molt to the second instar or third instar. Third instar larvae pupate in June. New adults emerge, mate and reproduce from late June until late July. Adults start dying in August and by the middle of September, hardly any adults can be found.

MATERIALS AND METHODS

1. Adults

Seven transects were set up in various areas across the dune, in an attempt to evenly sample all the dune areas as well as the various land forms at the site. Transects were marked by a brown jute cord measured to the appropriate length and secured by tent pegs at either end (Fig. 1; Table 1). Table 2 summarizes information about sampling dates, time of sampling, weather conditions and depth of dry sand.

Insects were counted by having an observer walk slowly along each transect, looking at the ground 1-2 m ahead. Tiger beetles automatically scatter and fly out of the area when an observer gets close to them. An observer, trained in identifying the three species of tiger beetles present in the dune, walked along all transects and identified the beetles seen based on the insect's size and elytra patterns. If the insect flew too quickly to be identified, the observer followed it to where it landed so the observer could see the markings better. Any beetles that scattered without being identified were not counted.

The original position of the beetle (before scattering) relative to the transect line was noted, along with its species. The two measurements made were "x", the perpendicular distance of the beetle from the transect line, and "y", the distance from the observer to the intersection of "x" with the transect. Measurements of all transects were taken approximately once per week (Figure 2).

The measurements "x" and "y" were used to calculate Hayne's estimator of density, a method developed for estimating the density of birds which flush when the observer comes within a certain radius (r) of the animal. We feel this estimator is also applicable to tiger beetles, which flush when an observer comes too close to them. Like birds, tiger beetles will fly when startled.

The counting method relies on the insects flushing out of the area in front of the observer. When the tiger beetles are startled by the approaching observer, they take off and fly approximately 2 to 10 m away from their initial position. The number of beetles

Figure 1. *Transects and their code numbers. Within the dunes, the red outlined areas are higher ground.*

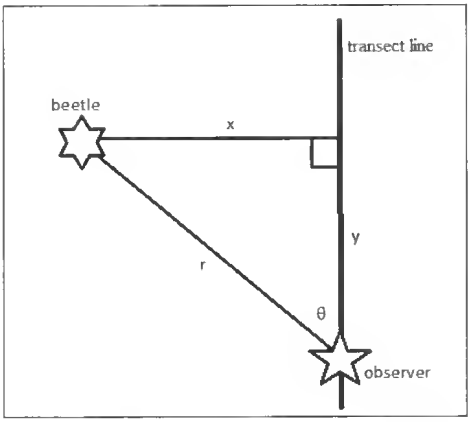


Figure. 2. *Method for recording a specimen position.*

counted may be lower than the actual number, especially for *E. lepida*, because of the difficulty in spotting the insects. *E. lepida* is the same colour as the sand, making it difficult to see even when it flies. Thus, not all of the beetles may have been spotted, leading to an underestimation of the beetle density at the Pinhey Sand Dunes.

The amount of data collected is too low to make any statistical calculations. Ideally we would have liked to count the beetles 2-3 times per week, but because of limited manpower, this was not possible.

Time of day when transect data was recorded may also have had an impact on the calculated insect density. Because it was not always possible to count the beetles at the same time each day, this may have skewed the data.

The physical rope marking each transect may have had an impact on how the beetles dispersed over the dune. It is possible that the tiger beetles were more or less attracted to areas with a rope. The beetles could have also been scared away by the rope's movement (e.g. the wind blowing the rope over the ground). This is probably a minor issue as the rope was nearly the same colour as the sand and did not stand out.

Table 1. *Transect Information.*

Transect No.	Length (m)	Transect Description	Slope	Sand Description
1	50	Runs through a low valley	Flat	Low organic matter
2	25	Runs up and down a small dune	Medium	Very clean sand, low organic matter
3	25	Runs up and down a medium sized dune	Low	Extremely clean sand, almost zero organic matter
4	50	Runs down a wide, moderate slope	Medium	High organic matter: pieces of wood chips, twigs and pine needles
5	50	Runs across a south-facing slope	Steep	Low-medium amounts of organic matter
6	25	Runs through many sedges and grasses	Flat	Medium amounts of organic material
7	25	Partly shaded by pine trees on the edge of the dune	Flat	Medium organic matter; sand contains pine needles and moss

Table 2. *Sampling dates for adults of three species of tiger beetles along transects, time and weather conditions at the time of sampling, and depth of dry sand.*

Date	Time	Cloud cover	Air temp. (°C)	Wind (km/h)	Relative humidity (RH%)	Depth of dry sand
Aug. 23, 2015	9:00	Sunny	17	light (9)	79	0 cm
	10:00		19			
	11:00		21			
Aug. 29, 2015	10:00	Mostly sunny	20	light (13)	80	0.5 cm
	11:00		22			
Aug. 30, 2015	10:00	Sunny, partly cloudy	20	low (10)	78	0.5 cm
	11:00		21			
Sept. 7, 2015	10:00	Sunny with wispy clouds	26	medium (22)	70	5 cm
	11:00		29			
Sept. 10, 2015	10:00	Sunny with some clouds	18	low (2)	75	0 cm
	11:00		20			
May 22, 2016	10:00	Sunny	19	light (17)	52	>10 cm
	11:00		21	light (18)	47	
May 29, 2016	10:00	Mostly overcast	21	light (9)	66	>10 cm
June 18, 2016	10:00	Sunny	24	light (4)	48	>10 cm
June 26, 2016	9:00	Sunny	22	light (5)	54	>10 cm
	10:00		26	light (9)	44	
July 6, 2016	19:00	Low sun, some clouds	30	light (8)	46	>10 cm
	20:00		26	light (8)	74	
July 11, 2016	19:00	Low sun, few clouds	27	light (13)	47	2 cm
	20:00		25	light (5)	57	
July 18, 2016	14:00	Sunny	28	medium (37)	52	1 cm
	15:00		29	medium (30)	44	
July 24, 2016	9:00	Overcast	20	light (5)	61	6 cm
	10:00		21	light (7)	56	
Aug. 3, 2016	19:00	Overcast and light rain	28	light (8)	48	>10cm
Aug. 4, 2016	19:00	Low sun, few clouds	31	light (16)	41	>10 cm
	20:00		29	light (13)	45	
Aug. 20, 2016	11:00	Mostly overcast	26	light (15)	58	2 cm

Figure 3. *Second or third instar larva of* Ellisoptera lepida.

2. Larvae

Larvae of tiger beetles after emergence molt three times (Figure 3). This allows the larva to grow larger. Larvae of *C. scutellaris lecontei* and *E. lepida* live in a shaft with an opening at the sand surface (Figure 4). The shaft opening is perfectly round and there is no hill around it. Occasionally when cleaning the shaft, the larva ejects sand, usually in one direction (Figure 5, ejecta look like pellets when fresh). They are quite distinct from ant hills or the big, mostly slanted, sand-wasp entrances. A newly emerged larva is the first instar larva and the shaft entrance is 1.4-2.0 mm in diameter. After the first molt, we have the second instar larva, and its shaft is 2.1-2.8 mm in diameter. The second instar will molt again and become the third instar larva, and its shaft is 3.0-4.1 mm in diameter. The diameter of each shaft of the 172 shafts photographed was compared with a dime (18 mm in diameter). At the next molt, the larva transforms into a resting pupa, which will give rise to the adult stage. Adults do not molt. The larva of *C. formosa generosa* is most unusual as it does not have an opening at the sand surface. Instead, the larva digs what can be best described as a pitfall trap with an opening on the side of the trap. The trap works in a way similar to that of antlions (Figure 6).

To estimate the number of tiger beetle shafts, we used a square metre frame. Once the frame was on the sand, we put a crescent mark near the shaft entrances until all the shafts were outlined, then we counted the number of small, medium and large shafts within the square metre frame. We recorded the data and moved the frame about 25 cm away to start over, and we recorded the date and weather conditions (Table 3). We sampled only within the fenced areas, as the sand surface was smooth due to the much reduced human traffic. Outside fenced areas, the footprints were too dense and finding shafts was challenging, especially the small ones. We did look at shafts outside the fenced areas and observed that medium and large shafts were rather common. The larvae are probably not too impacted by human traffic as they drop deeper when people approach. However, larvae must spend time and energy to dig their shaft out. Comparing the density of shafts within and outside of the fenced areas is probably important for conservation goals, but we did not do this comparative survey.

Figure 4. *Shaft openings of* Ellisoptera lepida: *1st instar* (left), *2nd* (top right), *and 3rd* (lower right).

At the time of sampling in September and October, larval shafts were easier to spot because of the reddish brown ejecta against the almost white sand. The darker sand from the ejecta is from below 20 cm. We know that the smallest shafts at that period are *E. lepida*, but we cannot separate medium and large shafts of *C. scutellaris lecontei* from those of *E. lepida*. Larvae are distinct but digging for larvae is extremely difficult as they are found at depths greater than 80 cm. The larval shafts of *C. formosa generosa* are much larger and rather different than shafts of other species. We are just starting to recognize these large shafts with confidence. Therefore, they were not considered in the project.

Though finding and counting shafts per square metre seems simple enough, we encounter weather variables affecting our results. The most important variable is the wind. If the sand is dry, the wind moves the fine sand and shafts disappear. The first to go are the small shafts. Next is the rain. A heavy rain obliterates the shafts. The best conditions are dry sand with little or no wind. Morning conditions are usually best.

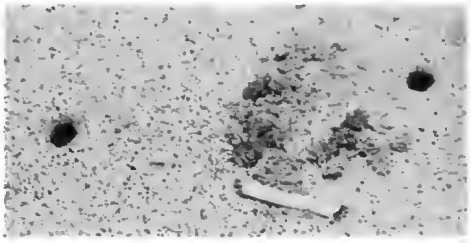


Figure. 5. *Shaft openings without ejecta* (left) *and with reddish-brown ejecta* (right).

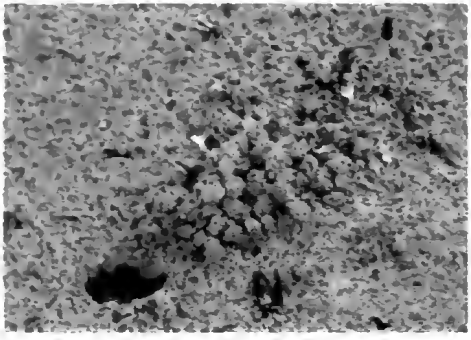


Figure. 6. *Larval shaft opening of* C. formosa generosa *within a pitfall-like trap with darker sand ejecta at the surface. Opening at front of trap is about 25 mm across; the trap is about 20 mm deep.*

Date (2015)	Nearest transect	Number of m² sampled
October 4	3	25
October 11	3	61
October 18	3	65
Total, Oct. 4-18		151
October 4	6	50
Total, Oct. 4-18	3 & 6	201
October 31	1	36
November 8	4	14
Total, Oct. 31-Nov. 8	1 & 4	50

Table 3. *Date, transect and number of square metres sampled for larval shafts of* E. lepida *and* C. scutellaris lecontei.

RESULTS

1. Adults

July was the month when we found the highest population of *Ellipsoptera lepida* (0.06 insects/m²) (Fig. 7). The first Ghost Tiger Beetles were spotted in late June. They were common in July, then much less abundant in August. This is consistent with the literature which also states *E. lepida* is found most commonly in July (Leonard and Bell). Though less numerous at mid-day (14:00-15:00 hours), adults are about as

numerous in the evening before sunset (19:00-20:00 hours) as in the morning (9:00-10:00 hours). We have recorded one active adult at twilight.

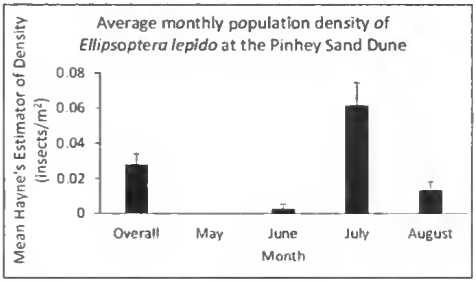


Figure 7. *Average population density per m² of adult* Ellipsoptera lepida *over the season and per month.*

The favoured areas for adults of *E. lepida* at the Pinhey Sand Dunes appear consistently to be transects 1, 2 and 5 (Fig. 8). There may be two reasons: the sand of these areas is clean, making the pale colour pattern of the adults more cryptic, and, because transects 2 and especially 5 are south facing, they are probably warmer than other areas of the dune.

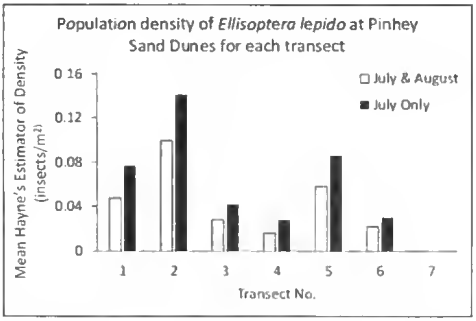


Figure 8. *Average population density per m² of adult* Ellipsoptera lepida *for each transect in July only, and July and August.*

Adults of *Cicindela formosa generosa* were most abundant in the month of May, with also fairly high numbers in June and August (Fig. 9). This is consistent with the literature, which states that *C. formosa generosa* experiences a dip in numbers in the middle of the summer, around July or August (Leonard and Bell).

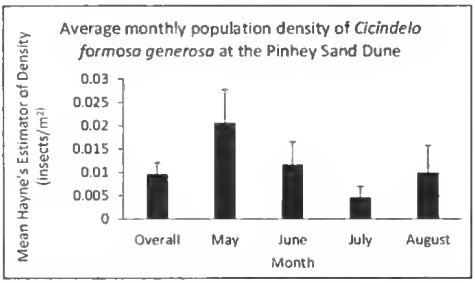


Figure 9. *Average population of* Cicindela formosa generosa *density per m².*

Adults of *C. formosa generosa* appear to favour transect 7 (Fig. 10).

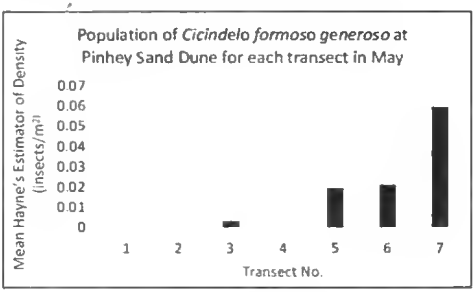


Figure 10. *Average population density of* Cicindela formosa generosa *per m² for each transect in May.*

Adults of *Cicindela scutellaris lecontei* were most abundant in the month of May, with fairly low numbers for the other months studied (Fig. 11). Adults appear to favour transects 5, 6, and 7 (Fig. 12).

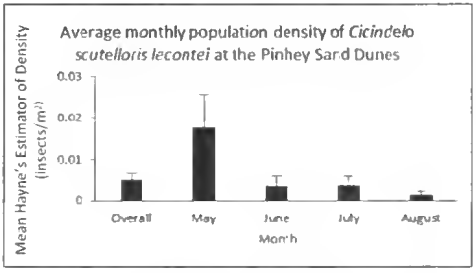


Figure 11. *Average population density of* Cicindela scutellaris lecontei *per m².*

The favoured transects for most adults of *Ellipsoptera lepida* were different from those preferred by *C. formosa generosa* and *C. scutellaris lecontei*. Adults of *E. lepida*

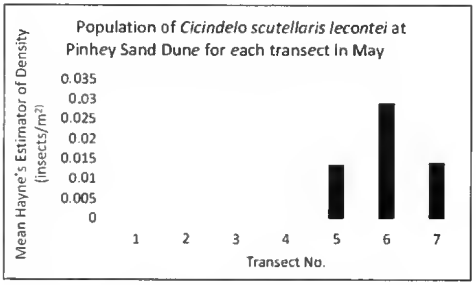


Figure 12. *Average population density of* Cicindela scutellaris lecontei *per m² for each transect in May.*

were mainly seen in the warmest spots. Moreover, they were commonly found where adults of *C. formosa generosa* and *C. scutellaris lecontei* are uncommon. The reproductive period and the favoured transects of *C. formosa generosa* and *C. scutellaris lecontei* overlap, but *C. formosa generosa* clearly favoured transect 7 while *C. scutellaris lecontei* favoured transect 6. *C. scutellaris lecontei* was common in the dunes before the appearance of *C. formosa generosa* in the late 1990s. Perhaps *C. scutellaris lecontei* is being displaced by *C. formosa generosa.*

The number of adult *Ellipsoptera lepida* was highest in July, while it was highest in May for *C. formosa generosa* and *C. scutellaris lecontei* (Fig. 13). In addition, *E. lepida* has the highest average density with 0.06 specimens per m² (476 specimens over 7935 m²) at peak abundance, followed

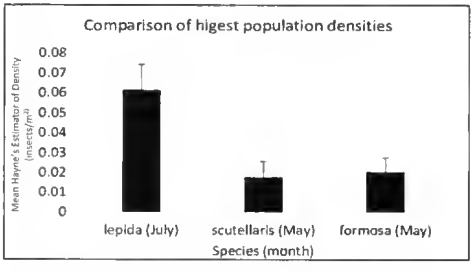


Figure 13. *Average population density per m² at month of highest density.*

by *C. formosa generosa* (266 specimens over 7935 m²), and by *C. scutellaris lecontei* (143 specimens over 7935 m²).

2. Larvae

Table 4 summarizes all our data in the fall of 2015. Only four transects were looked at. The main sites sampled in early October give a good idea of population density per square metre, as larval shafts were common. In transect 3, we sampled three times. On October 4, it was windy in late morning and many larval shafts were hidden by the blowing sand. The most affected were the small larval shafts which were 7-10 times less abundant than on calm days (Oct. 11 and 18). The medium and large larval shafts were 2-2.5 times less abundant. The total value for shafts was 2.5-3.0 times less abundant than on calm days. On the same day, but earlier in the morning, transect 6 showed some evidence of wind, though the lower numbers are still quite high.

Our highest average was recorded on October 11 with a total average of 9.28 shafts per square metre. This high average would suggest a population density of about 74,000 larval shafts over the entire sand dunes (7935 m²). The value for October 18 would suggest a slight decrease in population as the cooling trend continued and the number of larval shafts was diminishing, probably as larvae were going into hibernation. By October 31 (transect 1), few shafts were left as most larvae had gone into hibernation. By Nov. 8 (transect 4), almost no larval shafts could be found.

The proportion of larval shafts of the three instar larvae based on samples from October 11 and 18 are as follows: 1st instar = 21%, 2nd instar = 43%, 3rd instar = 36%. We have no data on the proportion of larval shafts for August and September.

Table 4. *Number of square metres per transect for a given period. Number of observed small, medium and large shafts (black values), and their average density per square metre (red values).*

Date (2015)	**Nearest transect**	**Number of m^2**	**Number of small shafts** & *Mean/m^2*	**Number of medium shafts** & *Mean/m^2*	**Number of large shafts** & *Mean/m^2*	**Total number of shafts** & *Mean/m^2*
Oct. 4	3	25	5	39	34	78
			0.2	*1.56*	*1.36*	*3.12*
Oct. 11	3	61	128	254	184	566
			2.10	*4.16*	*3.02*	*9.28*
Oct. 18	3	65	94	204	199	497
			1.45	*3.14*	*3.06*	*7.65*
Totals, Oct. 4-18	3	151	227	497	417	1141
			1.5	*3.29*	*2.76*	*7.56*
Oct. 4	6	50	30	198	101	329
			0.6	*3.96*	*2.02*	*6.58*
Totals, Oct. 4-18	3 & 6	201	257	695	518	1470
			1.27	*3.45*	*2.58*	*7.31*
Oct. 31	1	36	1	7	8	16
			0.03	*0.19*	*0.22*	*0.44*
Nov. 8	4	14	1	1	2	4
			0.07	*0.07*	*0.14*	*0.29*

CONCLUSION

The number estimate of larval shafts is very impressive, considering the small size of the Pinhey Sand Dunes. This is, in our opinion, a base study to investigate more questions on these fascinating insects.

Though adult population densities are much lower (about 1%) than our estimates for larvae due to intensive attacks by parasitoids and predators (Figs. 14-16), tiger beetles clearly are much more

abundant than at the start of our restoration in 2011. These observations unfortunately are anecdotal, but they are the only ones available for that period before 2011. This success was noted for many insects of the dunes not yet studied systematically. Our goal was to restore these dunes and their ecosystem. The tiger beetle study supports our goal of a renewed and improved dune ecosystem.

Figure 14. Live female wasp (Methoca stygia), *a parasitoid of tiger beetle larvae.*

Figure 15. Robber Fly, (Proctacanthus milberti), *a predator of adult tiger beetles.*

Figure 16. *Bee Fly* (Anthrax georgicus), *a parasitoid of tiger beetle larvae.*

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Reminder:

The deadline to submit an application for a 2019 OFNC Research Grant is

January 15, 2019.

For more details, go to **ofnc.ca** or see "OFNC Research Grants: Call for Proposals for 2019" in *Trail & Landscape* 52(4), Oct.-Dec. 2018, p. 228-229.

Crazy Horse Bog: A Small Gem on the Carp Ridge with a New Plant Species for the City of Ottawa

Holly Bickerton and Daniel F. Brunton
Photos by Daniel F. Brunton

Botanically speaking, most natural areas within the City of Ottawa have been well documented. This is the fortunate legacy of generations of excellent and dedicated botanists, many of whom were professionally employed by federal scientific institutions in the National Capital Region. However, it does make the exploration of a recently identified, floristically-rich natural area within the City of Ottawa a rare treat. An afternoon's exploration of the small (0.5 ha) Crazy Horse Bog (Figure 1) revealed just such a gem in July 2018.

It is located on the so-called "Crazy Horse" property at the south end of the Carp Ridge by March Road. The property is owned by the City of Ottawa, and is named after a now-closed tavern at the March Road trailhead. A trail network developed and maintained by the Friends of the Carp Hills offers hikers a glimpse of the rugged Canadian Shield terrain that is characteristic of this 4,750-hectare provincially significant natural area (Brunton 1997). The 15-km long Carp Ridge is otherwise still relatively contiguous, wild, and inaccessible: even such wide-ranging, large mammals such as Black Bear (*Ursus americanus*) and Moose (*Alces alces*) are resident (albeit, in small numbers) in the area.

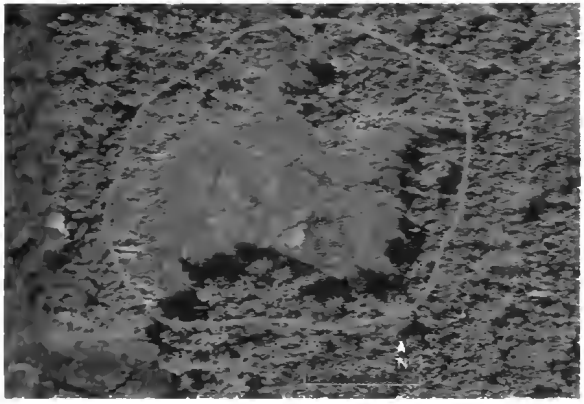

Figure 1. *The Crazy Horse Bog on Google Earth.* Photo above: *Humped Bladderwort in flower in the Crazy Horse Bog, July 21, 2018.*

Some intriguing photos of wetland vegetation in part of this expansive natural landscape, sent to us by a local naturalist, suggested that a particular wetland area in the Carp Hills was worth an exploration. Janet Mason, of Friends of the Carp Hills, initially spotted several of the unusual species listed here. Botanist Colin Chapman documented several of the rare species in 2017 on iNaturalist. However, the site was completely unknown to us and, as we were to discover, it is worthy of a thorough description.

Unlike so many Ottawa Valley wetlands that lie on calcareous Ordovician limestone, the Crazy Horse Bog (a mineralized bog or "poor fen") is found along a spine of acidic granite substrate of the ancient Canadian Shield (Ontario Geological Survey 2018). This gives it an unusual water chemistry in our otherwise predominantly calcareous region, resulting in an assemblage of species more typical of Shield wetlands to the north and west. Like all bogs it is not tremendously species-rich; in fact, we identified just 51 vascular plant species on the bog mat itself (Table 1). What matters is the extra-ordinary make-up of assemblage of species.

The bog is a bizarre, challenging habitat. It is treeless and also virtually shrub-less (Figure 2). It is completely saturated with strongly acidic water and has no actual soil. The substrate is a thick, peaty mat of composted vascular plant and moss material, resulting from centuries (perhaps even millennia) of slow decomposition. This organic mat topped by *Sphagnum* moss is floating in a black slurry of tea-coloured water and suspended organic particles, literally swaying up and down as brave (or foolhardy?) botanists venture out upon it. A network of narrow open water channels cuts across it (Figures 1 and 2). These are mostly kept open by American Beavers (*Castor canadensis*) as they move between adjacent upland forests and the freshwater pond south of the bog.

Figure 2. *Open bog mat in July 2018.*

Figure 3. *Beaver channel across bog mat with abundant red sundew plants along the edges and Water-shield in the open water.*

The vegetation of the bog mat is characterized by sedges, orchids and sundews – hardly a common habitat in these parts – with a few patches of struggling cattails (*Typha latifolia*), willows (*Salix* spp.) and clumps of Speckled Alder (*Alnus incana* ssp. *rugosa*) interspersed. Bladderworts (*Utricularia* spp.) and Swamp-candles (*Lysimachia terrestris*) line the exposed organic substrate along the edges of the channels, often pushing up through a bright red, virtually pure growth of Round-leaved Sundew (*Drosera rotundifolia*) (Figure 3).

Figure 4. *A cluster of Rose Pogonia in the Crazy Horse Bog in early July.*

Fourteen of the species found on the Crazy Horse Bog – that's almost one-third of the total – are considered regionally significant[1] for the City of Ottawa (Brunton 2005). There are virtually no non-native species present. The regionally significant (RS) Prickly Sedge (*Carex echinata)* is a co-dominant, together with the regionally uncommon Three-way Sedge (*Dulichium arundinaceum*).

Looking out over the bog in early July, we were struck by the abundance of pink flowers of another dominant species evident across the whole mat surface. At first glance we thought it was a flowering knotweed, but we were astonished to determine through binoculars that these were actually *thousands* of RS Rose Pogonia orchids (*Pogonia ophioglossoides*) (Fig. 4 and 5). In fact, we estimated 35,000 to 50,000 Rose Pogonia plants here – a density (upwards of 100/m²) undocumented anywhere else in eastern Ontario. This is also many times larger than the maximum (2,500 plants) from any particular site in the Ottawa District of Ontario and Quebec (Reddoch and Reddoch 1997).

Figure 5. *Close-up of a Rose Pogonia flower.*

Several other RS species found in the Crazy Horse Bog are known from only a few other places in the City. The acidophilic Club-spur Orchid (*Platanthera clavellata*), which is virtually unknown in the City of Ottawa outside of Mer Bleue (Reddoch and Reddoch 1997), also occurs as single plants scattered across the mat. Two species of Cottongrass (*Eriophorum* spp.) – which is not a grass at all, but a sedge – were also present. One of these, Filiform Cottongrass (*Eriophorum tenellum*) (Fig. 6) is otherwise known within the City only from Mer Bleue, where it is abundant. The delicate, white-flowered RS Marsh Willow-herb (*Epilobium palustre*) is a bog specialist, occurring almost exclusively on *Sphagnum* mats. It is known from only five other wetlands within the City. Canada Rush (*Juncus canadensis*) was found to be uncommon along beaver channel edges.

Figure 6. *Filiform Cottongrass in the Crazy Horse Bog.*

[1] Species are considered Regionally Significant (RS) if they are known to occur in 10 or fewer locations within the City of Ottawa.

There is no doubt, however, that the botanical star of the day was a diminutive yet showy species that is new for the City of Ottawa (Figure 7). The tiny Humped Bladderwort (*Utricularia gibba*) belongs to that unusual carnivorous genus of plants possessing tiny underwater bladders scattered along filamentous, submerged and modified stems like minute, deflated footballs (Figure 8). When trigger-hairs at the open mouth are disturbed, the bladders pop open, pulling in anything adjacent (such as a tiny insect or other invertebrate), where they are constrained by inward-pointing hairs. The organic prey is digested by the bladderwort, providing a valuable source of nitrogen in an otherwise nutrient-poor habitat. We found dense, mostly non-flowering patches of this rarity in beaver channels across the bog, sometimes growing with the much larger, fully-flowering Common Bladderwort (*U. macrorhiza*).

Figure 7. *A new plants species for the City of Ottawa: the tiny Humped Bladderwort* (Utricularia gibba) *photographed next to a dime in the Crazy Horse Bog on July 15, 2018.*

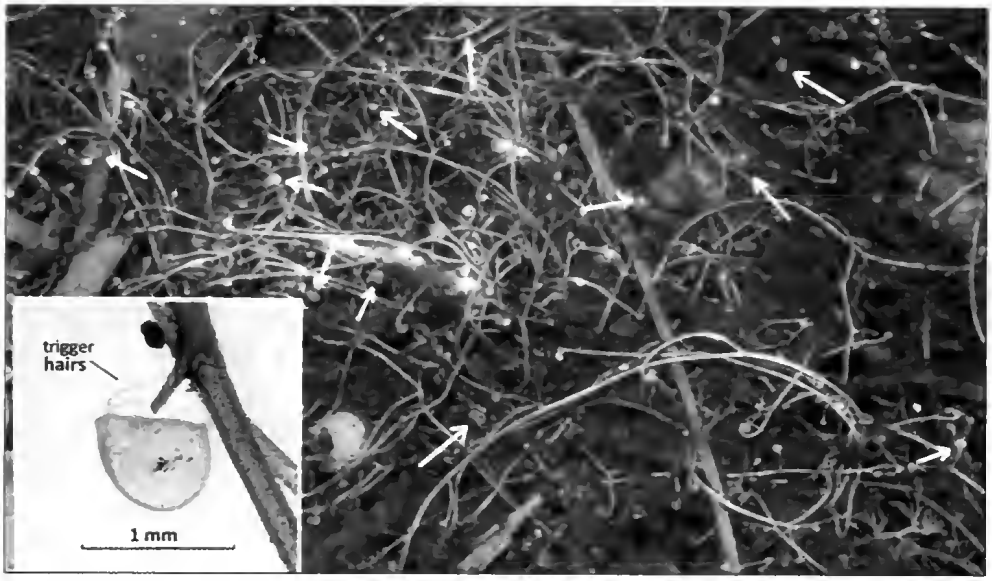

Figure 8. *Humped Bladderwort stems (white arrows) and traps (insert).*

Although Humped Bladderwort is a widespread species (in fact, it is cosmopolitan, being found on all continents except Antarctica), it is more common eastward in North America. It is uncommon to rare across Ontario and known elsewhere in the Ontario portion of the Ottawa Valley only in northern Renfrew County (Moore 1978, D. Coulson, pers. comm.). It is most frequently encountered in Ontario in the Algonquin Park to Parry Sound area of the Canadian Shield, often strongly associated with shoreline areas supporting rare assemblages of disjunct Atlantic Coastal plants (Crins et al., 1998, pers. obs.).

This was a most unexpected find. For some time, we had been looking for the species locally along acidic Ottawa River shores, similar to sites where it occurs in the upper Ottawa Valley. We had not considered it a possibility inland. In any event, finding a new native plant species in the 21st century in the City of Ottawa is rare, the most recent previous find being Greg Lutick's discovery of Cancer-root (*Conopholis americana*) in Stony Swamp in 2016 (Lutick 2018).

Figure 9. *Smoky Shrew hiding amongst orchids and sedges in* Sphagnum *moss.*

A few interesting faunal observations were also made as we slogged our way about the bog mat (and we both managed to fall through). We had the rare opportunity of watching a live shrew in action, this one being a probably regionally rare Smoky Shrew (*Sorex fumeus*) that quickly retreated into a tunnel in the *Sphagnum* moss (Figure 9). We crossed some large, fresh Moose tracks in the centre of the bog mat. We heard Green Frogs (*Rana clamitans*) calling regularly. A Northern Watersnake (*Nerodia sipedon*) was observed moving along one of the channels. A single gartersnake – possibly the regionally rare Ribbon Snake (*Thamnophis sauritus*) – was briefly seen before it disappeared into the obscuring mat of sedges and orchids.

The Crazy Horse bog is a gem within the City, but it is a fragile one. Bog mats – especially small ones – are physically sensitive and easily trampled. Vegetation can be fragmented and submerged; recovery from this physical damage can take years or even decades. For that reason (and for personal safety) we don't recommend venturing onto the mat.

Fortunately, the showiest element of the vegetation, the Rose Pogonia, can easily be observed from the trail bridge at the south end of the bog. A small patch of the Humped Bladderwort occurs along the drainage channel within a couple of metres of the boardwalk, too. Binoculars aid the viewing, but are not essential. A few Rose Pogonia orchids are also scattered along the pond edge immediately south of the trail and more readily available to those not willing to take their life into their hands by venturing out onto the floating mat!

It is possible that other small bogs (poor fens) occur elsewhere on the edge of the Carp Ridge. Later in September we explored several nearby wetlands of comparable size and structure, but did not find any of similar composition. We encourage others to check wetland shorelines within the Carp Hills for similar species and habitats. It is a large area, and you never know!

Table 1: Native Vascular Plant Species in the Crazy Horse Bog

BOTANICAL NAME	COMMON NAME	Regional Status
PTERIDOPHYTES		
Lycopodiella inundata	Bog Clubmoss	**RS (8)**[2]
Osmunda cinnamomea	Cinnamon Fern	Common
Osmunda regalis	Royal Fern	Common
Thelypteris palustris	Marsh Fern	Common
GYMNOSPERMS		
Larix laricina	Tamarack	Common
Pinus strobus	Eastern White Pine	Common
MONOCOTYLEDONS		
Typha latifolia	Narrow-leaved Cattail	Common
Calamagrostis canadensis	Canada Bluejoint	Common
Glyceria borealis	Northern Manna Grass	Uncommon
Glyceria canadensis	Rattlesnake Grass	**RS (6)**
Glyceria striata	Fowl Manna-grass	Common
Leersia oryzoides	Rice Cut-grass	Common
Carex canescens	Hoary Sedge	Uncommon
Carex comosa	Bristly Sedge	Uncommon
Carex echinata	Prickly Sedge	**RS (3)**
Carex lacustris	Lake Sedge	Uncommon
Carex retrorsa	Retrorse Sedge	Common
Carex utriculata	Beaked Sedge	**RS (8)**
Dulichium arundinaceum	Three-way Sedge	Uncommon
Eleocharis erythropoda	Red-stemmed Spikerush	Uncommon
Eleocharis palustris	Marsh Spike-rush	Common
Eriophorum tenellum	Filiform Cotton-grass	**RS (1)**
Eriophorum virginicum	Virginia Cotton-grass	**RS (6)**
Scirpus cyperinus	Wool-grass	Common
Calla palustris	Wild Calla	Common
Juncus brevicaudatus	Short-tailed Rush	Common
Juncus canadensis	Canada Rush	**RS (7)**
Iris versicolor	Blue-flag	Common
Platanthera clavellata	Club-spur Orchid	**RS (4)**
Pogonia ophioglossoides	Rose Pogonia	**RS (5)**

[2] The number indicates the number of local sites where the species is known. ("Regionally Significant" or RS, by definition, is less than 10.)

Table 1, Continued: Native Vascular Plant Species in the Crazy Horse Bog

BOTANICAL NAME	COMMON NAME	Regional Status
DICOTYLEDONS		
Acer rubrum	Red Maple	Common
Salix bebbiana	Bebb's Willow	Common
Salix petiolaris	Slender Willow	Common
Alnus incana ssp. rugosa	Speckled Alder	Common
Brasenia schreberi	Water-shield	**RS (9)**
Drosera rotundifolia	Round-leaved Sundew	Uncommon
Spiraea tomentosa	Steeplebush	Uncommon
Ilex mucronata	Mountain-holly	**RS (6)**
Triadenum fraseri	Marsh St. John's-wort	Common
Viola sororia var. affinis	LeConte's Violet	Uncommon
Epilobium palustre	Swamp Willow-herb	**RS (5)**
Cicuta bulbifera	Bulb-bearing Water-Hemlock	Common
Vaccinium macrocarpon	Large Cranberry	**RS (2)**
Lysimachia terrestris	Swamp Candles	Common
Lysimachia thyrsiflora	Tufted Loosestrife	Uncommon
Lycopus uniflorus	Northern Bugleweed	Common
Scutellaria galericulata	Marsh Skullcap	Common
Utricularia gibba	Humped Bladderwort	**RS (1)**
Utricularia macrorhiza	Common Bladderwort	Common
Galium tinctorium	Dyer's Bedstraw	Uncommon
Campanula aparinoides	Marsh Bellflower	Uncommon

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Cyperus fuscus:

New to Renfrew County and the City of Ottawa

Michael J. Oldham[1] and Grant Bickel[2]

Cyperus fuscus L. (Brown Flatsedge, souchet brun) is an introduced European annual sedge similar to the native *C. bipartitus* (Shining Flatsedge, souchet des rivières) and *C. diandrus* (Low Umbrella Flatsedge, souchet diandre). *Cyperus fuscus* is native to Eurasia and the Mediterranean region of northern Africa, extending from Greenland and Iceland to China, then south to Spain, Iran, Egypt, Algeria, and northern India (McKenzie et al. 1998). It apparently was first discovered in North America based on specimens collected by Herbert A. Young along Revere Beach in Essex County, Massachusetts, in 1877 (Knowlton et al. 1911, McGivney 1938). Although introduced and weedy in North America, *C. fuscus* is rare and of conservation concern in parts of its native range such as in Britain (Rich 1999).

Cyperus fuscus is now known from scattered North American records from the east coast to the west coast (Tucker et al. 2002) and continues to spread based on new records from Arkansas, Mississippi (Bryson and Carter 2010), Michigan (2000; Reznicek et al. 2011) and Minnesota (2007; Smith 2018). Until 2018, it was known no closer to the Ottawa area than Presqu'ile Provincial Park near the eastern end of Lake Ontario (M.J. Oldham # 20570, University of Michigan Herbarium, in 1997), and the Montreal area and Oka, Quebec (Hay 2013). In 2018, *C. fuscus* was found in Pembroke and at the Burnt Lands Alvar, new records for Renfrew County (Coulson 2010) and the City of Ottawa (Brunton 2005), respectively.

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Photo above: Cyperus fuscus *photographed along the Muskrat River in Renfrew County, September 1, 2018. Photo by Grant Bickel.*

How do we know it's not native?

Despite the faet that the first North Amerieaη record dates baek to 1877, whieh seems like an early date, the location (Revere Beach in Essex County, Massachusetts) is in Boston and has had European settlers since the 1600s. There are botanical colleetions from northeastern North America as early as the mid-1700s, and there were quite a few aetive botanists by the mid-to-late 1800s. For some speeies, it is difficult to know if they are native or introduced but for this one, there is no dispute among botanists.

Habitat and location is another good clue. If the species oeeurs mostly in pristine natural habitats in remote areas, then it is more likely to be native; if it occurs mostly in disturbed habitats, i.e. in human-modified areas, then it may more likely be introduced. This speeies seems to bc spreading in North America from thc original area where it was found and if it were native, there would probably bc early reeords from at least some more pristinc habitats and areas. The fact that it is still turning up in new plaees that have been fairly well botanized previously (e.g. Minnesota, Michigan, Quebec, Ottawa!) also suggests an introdueed species, sinee if it were native to North America, there is a good ehance it would already have reached these areas.

Cyperus fuscus was first reported from Ontario and Canada by Gillett (1971) based on a 1970 collection by William L. Putnam from St. John's Conservation Area, Niagara Regional Munieipality. Since then it has spread in the western Lake Ontario area (Figure 1). This sedge is also spreading in the United States, as doeumented by Bryson and Carter (2010), MeKenzie et al. (1998), and Weedon and Stephens (1969). *Cyperus fuscus* was first documented in Quebec in 1999, when it was found in the Montreal area, and later at Oka (Hay 2013).

Figure 1. *Distribution of* Cyperus fuscus *in Ontario and Quebec.*

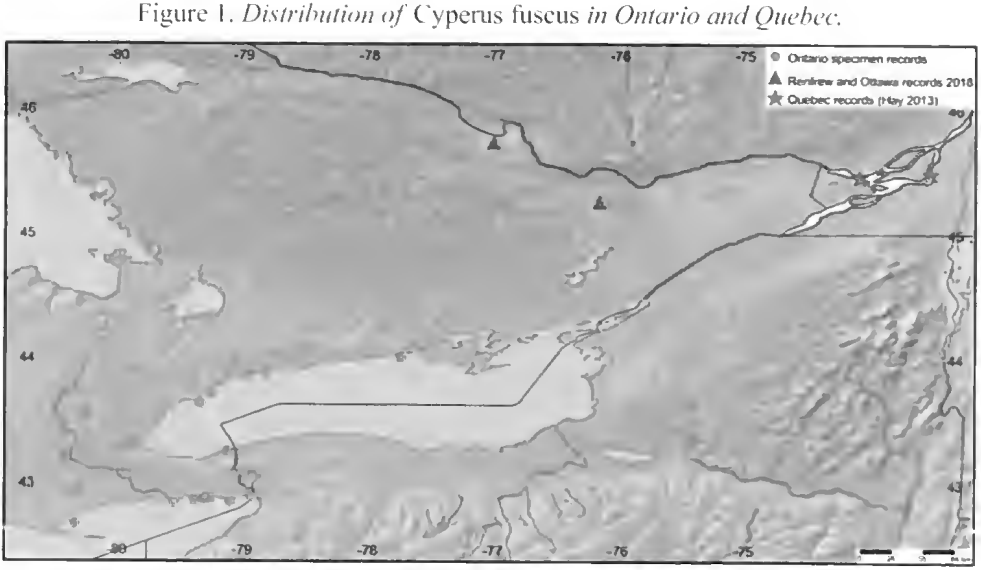

Figure 2. Cyperus fuscus *along the Muskrat River in Renfrew County, Sept. 1, 2018. Photo by Grant Bickel.*

On September 1, 2018, Grant Bickel found *Cyperus fuscus* growing in wet marl along the Muskrat River at the Hwy. 17 bridge in Pembroke, Ontario, where it was common and associating with *Cyperus diandrus* and *Eleocharis intermedia* (Matted Spikerush, éléocharide intermédiaire) (Figure 2). On September 20, 2018, Michael J. Oldham and Megan Matkowski found *Cyperus fuscus* at Burnt Lands Alvar growing in a moist, disturbed, open area associating with *C. bipartitus* (Figure 3). Voucher specimens from the two sites will be deposited in the herbaria of the Canadian Museum of Nature (CAN) and Agriculture and Agri-Food Canada (DAO). These two records are the most eastern and northern records in Ontario (Figure 1) and suggest that this species is spreading in the province and is likely to be found at additional sites in the Ottawa Valley.

Is it invasive?

Cyperus fuscus is unlikely to become a serious invasive species in the Ottawa area or elsewhere in Ontario. It is possible it could have some negative impacts however: the population at Burnt Lands was growing with the native sedge *Cyperus bipartitus* and both were quite common and growing intermingled. It is possible that if *C. fuscus* wasn't there, *C. bipartitus* would have been more common, or even that over time, *C. fuscus* will increase to the detriment of *C. bipartitus*. *Cyperus fuscus* can form quite large populations and high densities in a local area and it has been considered a weed in rice fields in other parts of the world.

As mentioned, *Cyperus fuscus* is similar to two other eastern Ontario *Cyperus* species: *C. bipartitus* (formerly known as *C. rivularis*) and *C. diandrus*. *Cyperus fuscus* has three-cleft styles and three-sided achenes while *C. bipartitus* and *C. diandrus* have two-cleft styles and two-sided achenes. Other distinguishing features of *C. fuscus* include its dark purple to reddish-brown or almost black scales, its strongly triangular stems, its bright rusty red roots, its small spikelets, and its pale, trigonous achenes. In the Ottawa Valley area, it has been found associating with the similar and native *C. diandrus* (Renfrew County) and *C. bipartitus* (City of Ottawa). ■

Acknowledgements

Dan Brunton provided helpful comments on a previous draft of this article, and Tony Reznicek and Charles Cecile provided information on specimens of *Cyperus fuscus* they collected in Ontario.

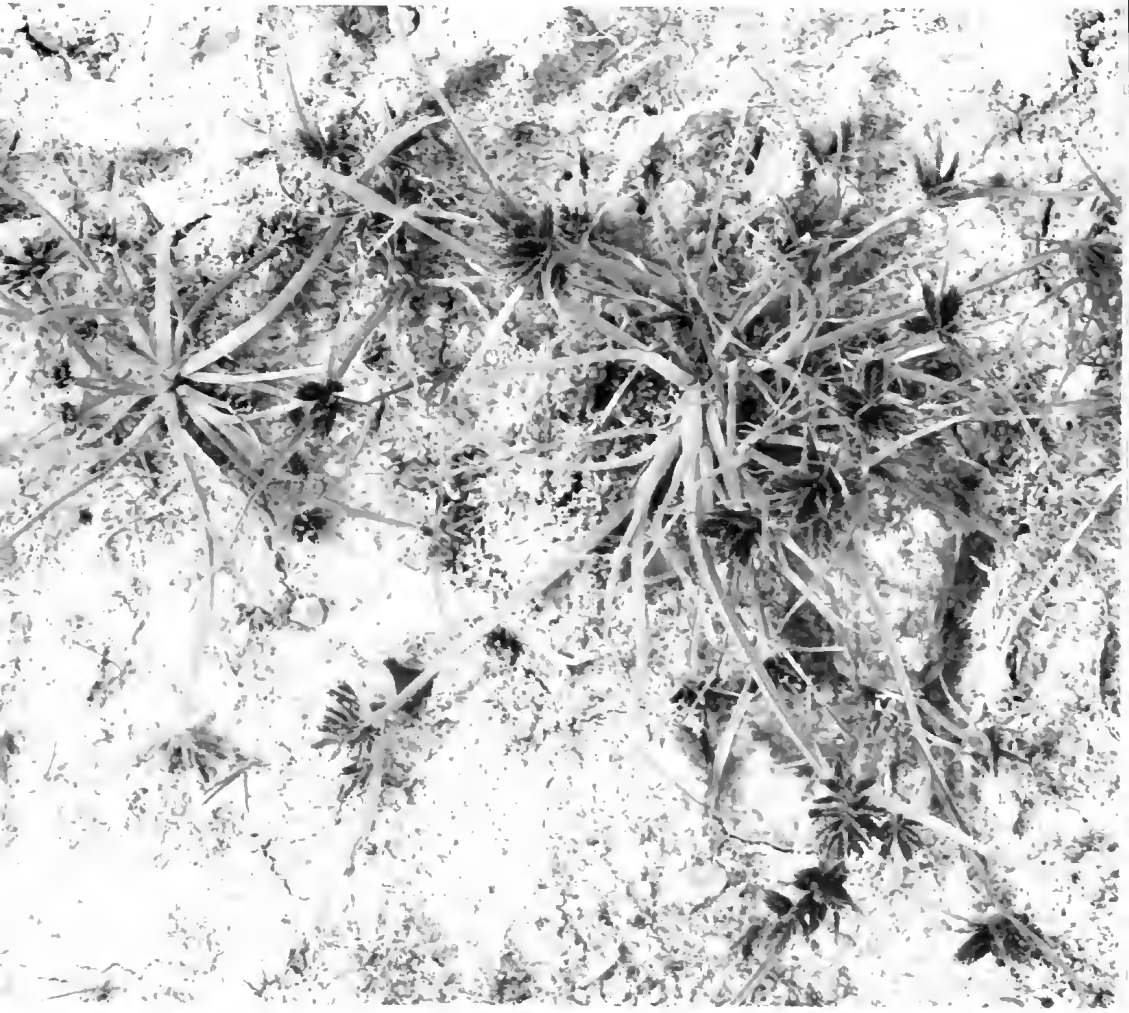

Figure 3. Cyperus fuscus (left) *intermixed with* C. bipartitus (right) *at Burnt Lands Alvar, City of Ottawa, September 20, 2018. Photo by M.J. Oldham.*

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Cyperus fuscus *along the Muskrat River in Renfrew County, September 1, 2018. Photo by Grant Bickel.*

The Ramsay Prairie:
High Plains of the Ottawa Valley

Article and photos by Daniel F. Brunton

Where do you find the largest natural prairie in Canada east of the Great Lakes? Why, in the Wild West of Ottawa, of course.

For many thousands of years, the Ottawa Valley has been a forested landscape – when it wasn't covered by glacial ice or an embayment of the Atlantic Ocean, that is. There are some exceptions to be found on cliff faces (largely in western Quebec) and along the Ottawa River, where relict plants and animals of open spaces have persisted since the time of the last glaciation (Brunton and Di Labio 1989; Catling 2009). Overall, however, the image of the Valley being a sea of pine, hemlock and maple over the last 8,000-10,000 years (Anderson 1995) is just about right.

A large and remarkable exception to all that exists on the Burnt Lands plateau straddling the City of Ottawa - Ramsay Township (Lanark County) border near Almonte. I am referring to the Ramsay Prairie or, as it has long been known by local residents, "The Plains". It is an area within the Ramsay Alvar, itself partially contained within Burnt Lands Provincial Nature Reserve Park (Figure 1).

Figure 1. *The Ramsay Prairie (shaded orange) on the Ramsay Alvar in The Burnt Lands.*

When the rapidly freshening waters of the post-glacial embayment known as the Champlain Sea were retreating from the lower Ottawa Valley about 11,500 years ago (Occhietti 1989), the first dry land to appear was on the Burnt Lands plateau. This relatively level limestone bedrock plain is about 160 m above sea level and about 30-40 m higher than the surrounding landscape. The emergent plateau was a demanding landscape in those early days, the glacial ice being just to the west and north and a subarctic-boreal climate dominating the dry land. It probably was initially much like the landscape along the Hudson Bay coastline today, covered in tundra vegetation and with scattered clumps of stunted Black Spruce (*Picea mariana*). While this vegetation transitioned into more familiar Ottawa Valley associations by 7,500 years ago (Gilbert 1994) with the development of a warmer climate and accumulation of deeper soil, landscape evolution on high, dry, exposed areas like the Burnt Lands was much different. Here and in similar sites in southern Ontario, prairie-like grasslands formed during particularly dry periods in these prehistoric times (Brunton and Catling 2017).

With the Ottawa Valley still connected to central North America through active post-glacial drainage systems, many species of plants and animals we now consider to be western species were able to reach this region. The unusual characteristics of periodically saturated but otherwise dry, thin soil over limestone bedrock encouraged the development of globally rare alvar vegetation here as it did elsewhere in southern Ontario, particularly in the Lake Huron region (Brunton and Catling 2017). Natural fire and drought were and continue to be important factors (it is called The *Burnt* Lands, right?) in suppressing competition from off-site vegetation (Catling and Sinclair 2002, Catling and Kostiuk 2014). This regular regime of natural disturbance contributed to the development and maintenance of grass-rich, prairie-like savannah communities (Reschke et al. 1999).

A baseline inventory of the flora and fauna of the Burnt Lands, in the course of nature reserve and Provincial Park planning considerations, documented a remarkable native biodiversity (Brunton 1986), including a variety of rare vegetation types and a number of provincially and regionally rare species. Indeed, one of the provincially rare species, Prairie Dropseed (*Sporobolus heterolepis*), was found here in such abundance as to constitute a distinctive vegetation type unto itself. This is interpreted (Brunton 1986) as representing a relict example of these post-glacial prairies.

Prairie Dropseed is an endemic grass of the tall-grass prairie region centred on the eastern edge of the continental interior of the United States and adjacent Canada, with isolated, disjunct occurrences east of the Great Lakes in southern Ontario and adjacent Quebec (Peterson et al. 2003; Dore and McNeill 1980). It is considered rare in Ontario (Oldham and Brinker 2009). It is a handsome grass, forming large, copper-coloured tussocks (Figure 2) and forming dense stands typically numbering into the dozens or even hundreds of plants.

What made the discovery of Prairie Dropseed at the Burnt Lands particularly remarkable was its abundance. Here, in addition to scattered patches across the alvar, it grows as the dominant species in a massive, continuous meadow extending for hectares. This population consists of many thousands of plants and represents the largest stand known in Ontario. The extent of this stand defines the Ramsay Prairie (Figures 1 and 3).

Figure 2. *Mature tussocks of Prairie Dropseed* (Sporobolus heterolepis) *in the Ramsay Prairie, September 23, 2013.*

Figure 3. *The open Ramsay Prairie on July 16, 2015.*

The Prairie extends for approximately 65 ha, most being an open tall grass meadow as one might expect of such a place. The southern 10-15%, however, is over-topped by plantations of Jack Pine (*Pinus banksiana*) unwisely established prior to 1980 by Ministry of Natural Resources foresters as cover crop to fix the "problem" of treeless land occurring here. Fortunately, the trees have not prospered and appear to be providing minimal unnatural shading of the significant natural vegetation and biota below. The soil in the prairie is relatively deep, likely benefitting from centuries of organic material deposition from the grass cover. It now supports a variety of other interesting and significant native plants that are tolerant of the harsh site Prairie conditions. The virtual absence of native woody shrubs or trees attests to the success of fire and drought in maintaining these conditions, apparently for millennia.

Prairie Dropseed is by far the dominant plant of the Ramsay Prairie, representing more than 95% of the ground cover. Exceptionally, few non-native plants are capable of surviving in this pristine but challenging habitat. The tough-as-nails Common St. John's-wort (*Hypericum perforatum*) and Yellow Hawkweed (*Hieracium piloselloides*) are amongst the few such weeds that persist here.

The list of native plants found scattered across the Prairie includes a number of regionally unusual species, almost all of those being otherwise of western and/or Great Lakes affinities and virtually unknown in Ontario away from alvars. These include regionally uncommon or rare species (Brunton 2005) such as:

Kalm's Brome-grass (*Bromus kalmii*)
Wild-timothy (*Muhlenbergia glomerata*)
Ensheathed Dropseed (*Sporobolus vaginiflorus* subsp. *vaginiflorus*)
Crawe's Sedge (*Carex crawei*)
Low Saskatoon (*Amelanchier humilis*)
Oakes' Evening-primrose (*Oenothera oakesiana*)
Small Skullcap (*Scutellaria parvula*)
False Pennyroyal (*Trichostema brachiatum*)
Upland Goldenrod (*Solidago ptarmicoides*)

Most spectacularly, however, the Prairie supports a large population of Great Plains Lady's-tresses (*Spiranthes magnicamporum*) (Figures 4 and 5), discovered on the Lanark County side of the Ramsay Prairie by Paul Catling in 2013 (Reddoch et al. 2013). Much like its close associate, Prairie Dropseed, this is a species of tall-grass prairie habitat found primarily west of the Great Lakes. Hundreds of these provincially rare orchids persist here, over 200 km east of the next closest Ontario population (on the Carden Plain east of Lake Simcoe) and more than 100 km from the closest population, located to the south in upstate New York (Brunton 2015).

Figure 4, right: *Great Plains Lady's-tresses* (Spiranthes magnicamporum) *flowering stalk, September 23, 2013.*

It has been erroneously suggested that the Alderville Black Oak Savannah in Northumberland County represents the "easternmost point of naturally occurring prairie vegetation in Ontario" (Baxter 2016). That important 50-ha natural area includes a restored remnant of the immense tall-grass prairie that once dominated the Rice Lake Plains (Keller 2016). It is located approximately 200 km south and west of the Burnt Lands. So it seems that the Ramsay Prairie is not only the easternmost tall-grass prairie in Canada, it is also the largest example of this rare and vulnerable habitat persisting east of at least the Lake Simcoe area.

All these extraordinary features aside, it is remarkable just to stand on the Ramsay Prairie in late summer when the Prairie Dropseed is in its glory and the only sound is the wind coursing across the meadow. One can't help but contemplate what the view must have been like here hundreds or even thousands of years ago. The remarkable answer is... just like it appears today. The only difference, in fact, would be the likelihood of a small herd of Wapiti browsing along the woodland edge in those long-gone days instead of the only too common White-tailed Deer frequenting the area today. In other words, the Ramsay Prairie does not just *look* like what such a landscape would have long ago, it *is* a living representative of those prehistoric times.

Figure 5. *Great Plains Lady's-tresses* (Spiranthes magnicamporum) *plants amongst Prairie Dropseed tussocks, September 23, 2013.*

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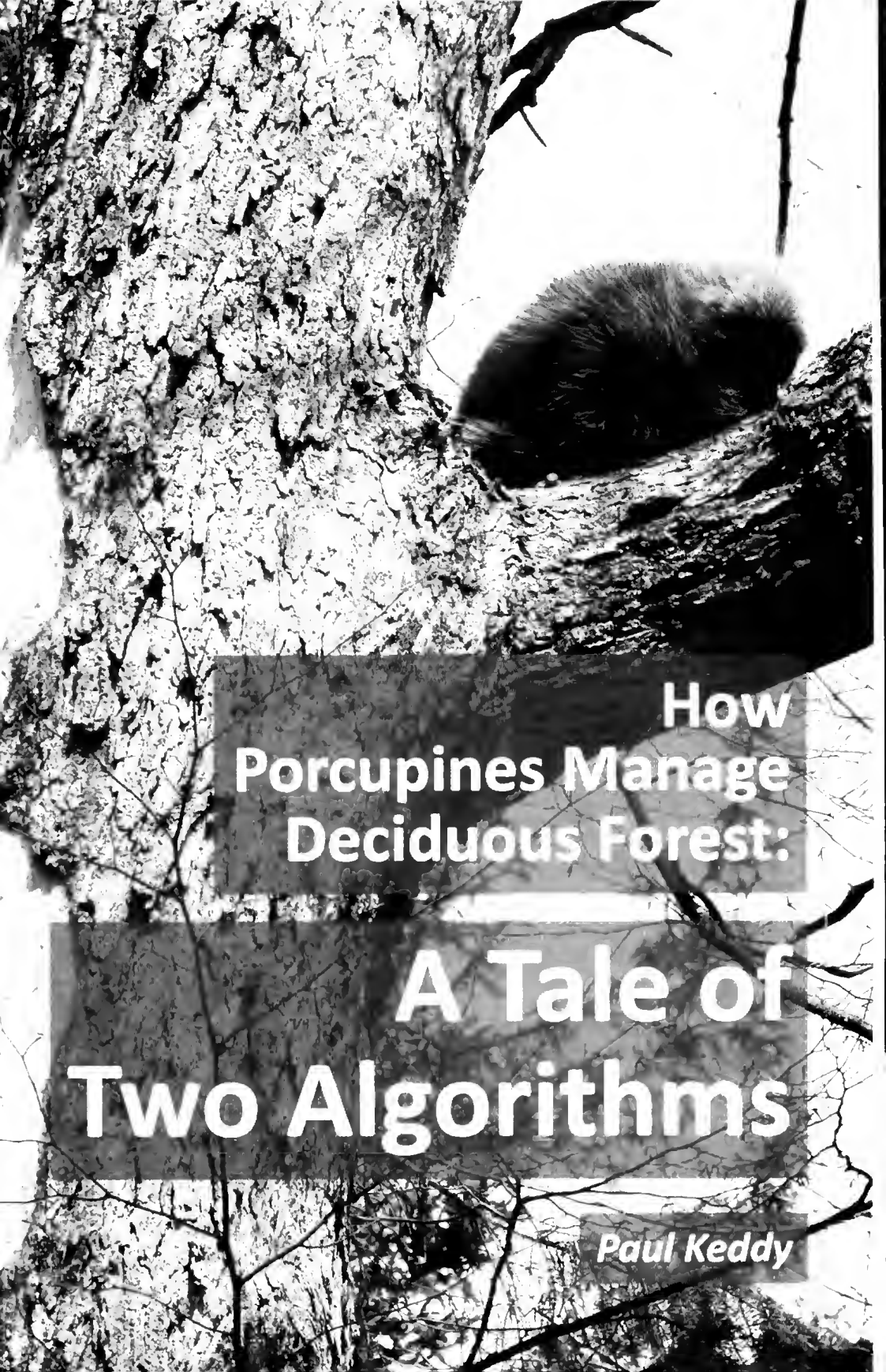
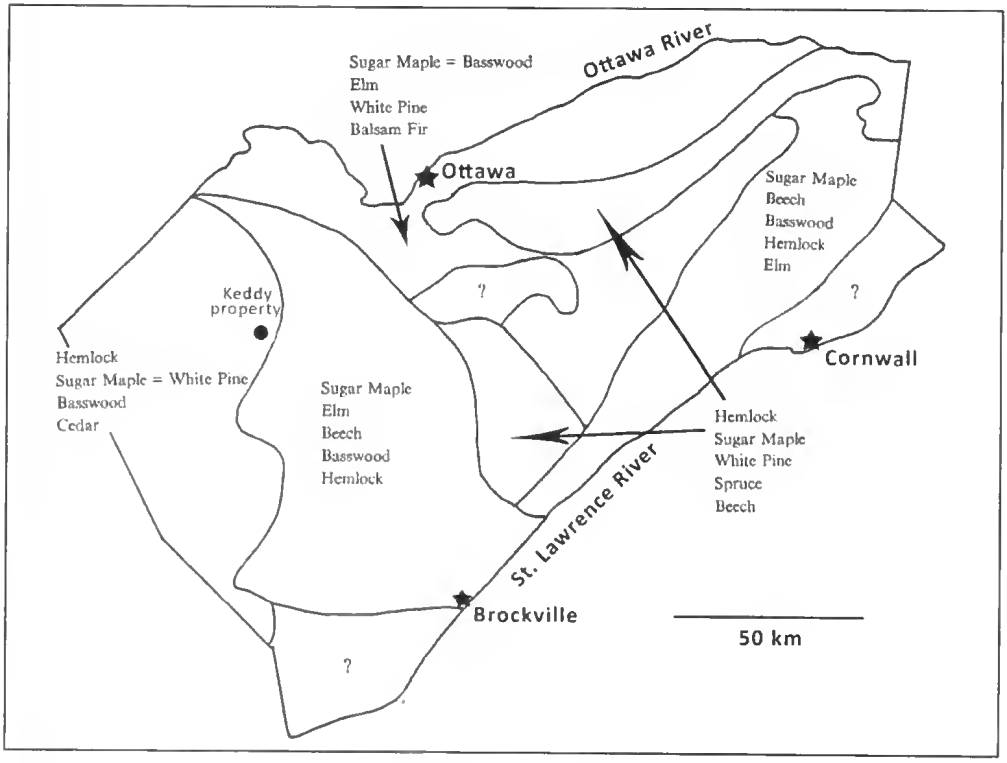


How Porcupines Manage Deciduous Forest: A Tale of Two Algorithms

Paul Keddy

The Ottawa Valley was onee covered by dense forest. The dominant trees were maple, oak, pine and hemlock. We know this from sources ineluding pollen records from lake sediments and records made by early surveyors. Using such information, we ean even map the original forests of this region (see Map 1). Our forests here have now suffered from several hundred years of human abuse, ineluding logging, clearing for farms, multiple eyeles of firewood cutting, and grazing by eattle. So, when we have a pieee of forest to manage now, we have roughly three ehoiees: (1) we ean continue the eycle of abuse, taking whatever we ean whenever we ean, (2) we ean stop any aetive management and let the forest reeover in a more or less random way, or (3) we ean quite deliberately try to actively manage it in a way that helps restore it to a eomposition that was typical of the pre-settlement era. I have been trying to do the latter with my own piece of forest, which comprises some 500 aeres west of Ottawa. Of eourse, there are other speeies that also have their own views on forest management, including beavers, porcupines and while-tailed deer.



Map 1. *The tree species (in order of relative abundance) in upland forests of each physiographic region of Eastern Ontario prior to European settlement. These were mapped by Cathy Keddy based upon surveyors' notebooks stored at the Survey and Mapping Branch of the Ontario Ministry of Natural Resources (Keddy, C.* Forest History of Eastern Ontario. *Information Report No. 1. Eastern Ontario Model Forest, Kemptville, Ontario, 1994.) Table 1 in this report shows that the three dominant trees in till and rock landscapes were maple, hemlock and white pine. Other common species included beech, elm, basswood, ash and white cedar.*

Previous page: *A porcupine lounging on a branch of its feeding tree, Keddy Nature Sanctuary, April 9, 2017.*

First a note on my own forest management for the 600 acres we own. For some forty years, I have applied a well-honed algorithm for forest restoration and firewood cutting. My first objective is to restore a closed forest canopy, to ensure that the ground is shaded again. Shade is necessary for native spring wild flowers to replace the mostly exotic grasses and forbs found in old fields. A forest canopy also allows interior forest birds to breed, and it ensures that mostly shade-tolerant trees regenerate from seed in the future. My second objective is to try and recreate a more natural canopy composition, which should then benefit all the other wild species that live in this forest. The long term goal is to allow the forest to recover to the natural composition it likely had back before logging and settlement changed it. Since it took some two centuries for the process of degradation to occur, I am aware that my current work must patiently nudge the forest back in the right direction, accepting that the final desired result will not occur in my lifetime. I hope one day the forest will look like ancient forest, perhaps like one of the fine older stands in Algonquin Park or Gatineau Park.

The current forest is very different from the original pre-settlement forest, which was dominated by sugar maple, American beech, red oak, eastern hemlock and white pine. We know the composition of these original forests from Cathy Keddy's work using notebooks kept by land surveyors (Map 1). The current forests are now dominated by ironwood, white spruce, white birch and poplar, and there are scattered clearings that have few trees at all. How does one begin to restore a degraded forest and to generate firewood? The first rule in my algorithm is to find two healthy young trees closer than eight feet from one another. In order to increase rates of growth, one of the two must go, and one can stay. Which tree to keep? First to keep are those tree species mentioned above that were important canopy trees in natural deciduous forests: sugar maple, American beech, red oak, eastern hemlock and white pine. (I am not sure why red oak is not more prominent in Cathy Keddy's report but I think there are good ecological reasons to assume it was an important species in some locations, at least on the rock ridges that typify our protected forest.) Another list of keepers are trees that are relatively rare on our property: butternut, bur oak, black cherry, yellow birch and bitternut hickory. By far the commonest tree on our property is ironwood, a midsize tree that is relatively tolerant of drought and poor soils. I suspect the abundance of ironwood reflects past forest uses, such as selective removal of maple and oak for firewood and grazing by cattle. Ironwood seedlings are usually left by herbivores (much more on this topic below). So, when I am marking trees for firewood, usually my cutting decisions are straightforward: one tree an ironwood, the other a sugar maple? Cut the ironwood. Occasionally the algorithm fails: what to do if one tree is an American beech, and the other a black cherry? In such a case, the algorithm recommends keeping both. This also provides a margin of safety, since it is reasonable to assume that in a coming decade, an ice storm or another falling tree or a beaver will make the choice for me.

Left: *Beavers selectively remove trees such as red oak, sugar maple and beech. Here's one on our House Pond on April 7, 2015.*

Still lounging... and watching!

I have applied this simple algorithm over hundreds of acres for four deeades, getting healthy exereise and heating my house. I am pleased to report that the forest looks mueh more like the original forests of Lanark County than when I began stewardship. More importantly, as the surviving trees grow in the coming decades, and produee new generations of seedlings, we will have something better than the typieal degraded, second growth forests you often see in farm woodlots around Lanark County. We are such optimists that we have provided our loeal land trust with a mixture of a conservation easement and outright land gift so that no one will be able to log or subdivide or otherwise harm these forests in perpetuity, beginning with the next 999 years. So, taking the expansive view, our tree removal for wood heating is going to leave a vastly more natural forest for future generations of wild ereatures.

Our woodpile tangibly illustrates the progress. It shows the output from my algorithm. That is, it is a highly selective woodpile. We heat with the species that are least desirable in a restored forest.

What eould go wrong with this plan? It has become apparent that a group of my neighbours has a different algorithm to guide their use of the forest. These neighbours are poreupines, and there is a rather large population of them. I ean think of at least ten trees whieh are porcupine dens. A single enormous butternut, for example, houses at least three. Poreupines, like most herbivores, are quite selective about their food. They don't generally eat wood, because wood is mostly cellulose. Rather, they eat tree bark, because the eambium in the bark has higher levels of nitrogen and phosphorus. These are two critical nutrients for animal growth, and nearly all herbivores have a preference for tissues with high nitrogen levels – cambium, buds, and seeds. This selectivity in herbivores is a world-wide phenomenon, and I have written a full chapter on it in my latest book, *Plant Ecology*.

Porcupines, like goats, elephants, or tortoises, can be very selective in their diet. Hence, porcupines have their own algorithm for forest management, and it is quite different from mine. Give them a pair of trees, and the decision goes something like this: if it is ironwood, leave it alone. If it is maple, oak, or beech, remove the bark. If it is hemlock, remove the foliage in the winter. As you can immediately see, their algorithm is not only different, but almost exactly the opposite of mine. They keep the ironwood, and remove the maple, oak, and beech.

This process was driven home during the winter of 2017-2018 on a rock ridge not far from my house. Here was a piece of forest which I had been managing by my own algorithm for several decades. In this stand of forest, an ancient basswood tree, part of which is hollow, provides shelter for at least one, and possibly more, porcupines. This winter, radiating out into the forest from this ancient tree, there was a network of trails in the snow. At the end of each trail was a debarked maple tree. Nearly every week would reveal a new trail and a new heavily-grazed maple tree. In just one winter, more than a dozen maple trees, each about thirty years old and growing vigorously, had been debarked extensively, likely enough to kill the tree. In just one winter, then, the forest composition has been strongly pushed back to being an ironwood-dominated rock ridge. As if to finish the task, there were also several young hemlock trees that I had carefully observed and tended. They were half stripped of foliage too, including the top branches where growth would be most important.

I understand, of course, that porcupines eat bark, and have seen many examples of this over my lifetime. But this winter drove home how selective porcupines are in their feeding, and how rapidly they can change the composition of a forest. It is obvious now, as you can see the whitish trunks of the debarked maple trees, somewhat like skeletons standing in the forest. If you fast forward twenty years, the porcupines may be long gone. Perhaps they will have exhausted their food, or have been eaten by fishers. But their effects will still be in evidence – the maples will be gone, and ironwood forest will continue to dominate this rock ridge. Will future biologists wonder what created such a forest, and perhaps treat it as a consequence of shallow soil, or drought, or even climate change? Moreover, it is not just one rock ridge – it seems likely that the same process is occurring around each porcupine den in our forest.

Left: *A young sugar maple debarked by porcupines.*

It is not just porcupines. The forests here have another herbivore working through them in a similar way, with trails radiating outward not from a hollow tree, but from a nearby pond. For a decade, our ponds have had resident beaver families. The beavers seem to have food preferences similar to porcupines, as evidenced by the stumps of sugar maple, red oak and beech. When beavers get really hungry, they will turn to ironwood, although it is my impression that ironwood is mostly used for construction purposes. It would seem its bark is mostly a food of desperate last resort. Since the 1970s, when beaver populations seem to have been highest, they have eaten through the surrounding forest, removing their preferred food trees, leaving ironwood and white spruce. Eventually they disappeared from many of the ponds, probably because the food supply was insufficient. Once again, while my algorithm removes ironwood and white spruce, their feeding algorithm leaves both these species.

Then we have white-tailed deer. The current population density of deer is vastly above what the forest can really support. Eight "white-tailed" over-wintered on just one ridge near our home. During this winter they removed nearly all the terminal buds on any sapling or seedlings less than four feet tall. The skeletons of these small trees are still there, but they simply have no buds. Each tree struggles to produce new buds and branches in the summer, but the deer remove these new shoots as well. The forest understory, therefore, consists mostly of deformed young trees awaiting death. It will interest you to know that there is one species that deer seem to avoid – ironwood.

Deer eat nearly all species of young trees, and most native shrubs, but they generally leave ironwood.

It is becoming increasingly apparent to me, then, that my landscape is dominated by ironwood for a good reason. We are now living in an herbivore-dominated landscape. I was trained to think that our forests are mostly controlled by soil depth and soil moisture; perhaps the herbivores matter more. In the past, in pre-settlement forests (Map 1), porcupines were likely consumed by fishers and bobcats. A few fishers have, indeed, returned to our region (we see their tracks in the winter), but apparently there are not enough of them to reduce the porcupine population. In the past, deer and beaver may have been controlled by wolves and cougars. Now we have neither of these large predators. We do have coyotes, and each winter we see the remains of several carcasses left by them. Of course, this does not mean that the coyotes even killed those deer. Perhaps they mostly consume deer that died of natural causes. In any case, the abundance of deer tracks and the

damage from deer feeding shows that coyotes are simply not up to the task of controlling herbivores. Looking ahead, I find it hard to imagine that fishers, bobcats, wolves and cougars will soon resume their vital work of protecting forests from herbivores.

Even our oldest and most natural tracts of forest on this property may now be changing under steady pressure from herbivores. These areas of forest have a canopy of maple, oak, beech and hemlock. Trees occasionally die, of course. Each such gap is where the future of the forest lies. If you look carefully at what new young trees are establishing in gaps, you can forecast the trees that will occur decades or even centuries into the future. When a gap occurs and tree seedlings establish, the deer remove nearly all the seedlings except ironwood. We therefore have small clusters of ironwood emerging under our oldest maple, oak and beech trees. Occasionally a few young maples or hickory hide within those ironwoods: they offer some hope. Of course, these trees are still less than ten feet tall. Soon they will be large enough for the porcupines to find!

A young oak tree partially debarked by porcupines.

In short, we have three dominant herbivores, all abundant, and all with a forest algorithm quite different from mine. I thought for a few decades that my algorithm, focussed upon restoring our landscape to its original composition, might direct the next centuries of tree composition, and leave a lasting positive impact on this landscape. It would seem, rather, that the porcupines will win, aided as necessary by the deer and beaver. They have their own plan for the future: ironwood-dominated rock ridges, with white spruce in the valleys. We will have to ask our grandchildren to report on whose plan has been carried to fruition. Meanwhile, I have learned a valuable lesson from our winter porcupine: never underestimate the power of herbivores to shape forests and landscapes.

All photos were taken by Cathy Keddy.

About the author: Paul Keddy (www.drpaulkeddy.com) is a biologist and author living in Lanark County. His latest book is Plant Ecology: Origins, Processes, Consequences, *Second Edition, 2017, with Cambridge University Press. He and his wife, Cathy Keddy, are stewards for Keddy Nature Sanctuary, one of the larger properties protected by the Mississippi Madawaska Land Trust.*

Left: *A porcupine taking refuge in a hollow tree during the winter.*

Summary of the Bird Observations from the Ottawa Area for 2017

Gregory Zbitnew

All birders are encouraged to submit their observations to eBird. This is the best tool available to access current and preserve historical information, and this summary would have been very difficult to prepare without it. Currently, many parts of the region are not heavily birded, most particularly the Quebec counties outside of Gatineau. So don't be shy to visit less well known areas: rarities can be found anywhere.

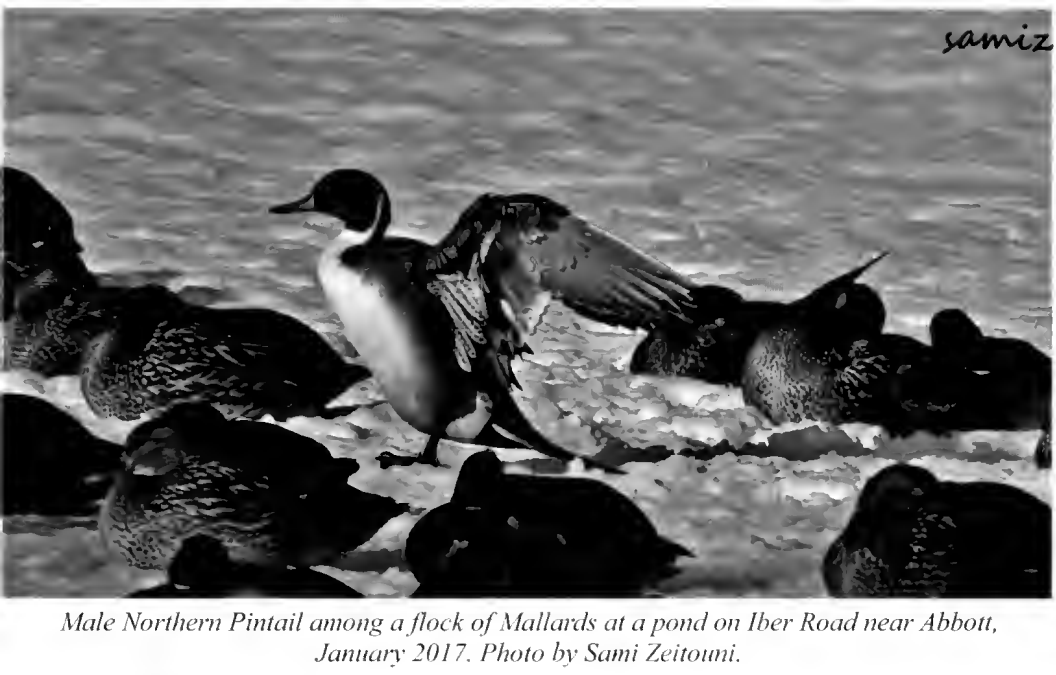
OVERVIEW

The "Ottawa Area" or "OFNC Study Area" to which we refer in this article is defined as a circle with a radius of 50 kilometres centered on the Peace Tower.

2017 was quite a contrast to 2016, having a large number of excellent birds, some of which were kind enough to stick around for a while to be seen by many people. Two new birds were added to the regional (50K) avifauna list: an ANNA'S HUMMINGBIRD in Carleton Place in November, and a BLUE GROSBEAK near Dunrobin in June. An estimated 277 species were seen in the region as a result of the cumulative efforts of hundreds of birders and photographers. Of these, there were 22 significant rarities, birds not seen annually and heavily chased:

1. MUTE SWAN
2. KING EIDER
3. WESTERN GREBE
4. GLOSSY/WHITE-FACED IBIS
5. WILLET
6. RAZORBILL
7. NORTHERN GANNET
8. AMERICAN WHITE PELICAN
9. FRANKLIN'S GULL
10. SABINE'S GULL
11. LAUGHING GULL
12. ANNA'S HUMMINGBIRD
13. CAVE SWALLOW
14. LOGGERHEAD SHRIKE
15. CANADA JAY
16. YELLOW-HEADED BLACKBIRD
17. BLUE GROSBEAK
18. WESTERN TANAGER
19. BLACK-THROATED GRAY WARBLER
20. BLUE-WINGED WARBLER
21. CONNECTICUT WARBLER
22. PROTHONOTARY WARBLER

As always, weather was the defining factor in birds and birder activity. The severe December weather of 2016 moderated in January 2017, and late February had a significant thaw resulting in some unusually early arrivals. Unfortunately this proved to be temporary, as cold returned in March. Normal temperatures returned in April, but that was the start of a period of record rainfall, with major flooding in May that even flooded part of Britannia. The heavy rain continued into July, which may have been our wettest month ever. Thus the rivers remained high and SHOREBIRD habitat was particularly scarce. A severe windstorm in late September damaged many parts of Britannia, blocking access to parts of it for some time. September and October were rather mild and dry, but November was colder after mid-month. December started off pleasantly, but became quite cold by mid-month, meaning an early freeze-up and nothing notable being seen after that.



Male Northern Pintail among a flock of Mallards at a pond on Iber Road near Abbott, January 2017. Photo by Sami Zeitouni.

DUCKS AND OTHER WATERBIRDS

There were, as usual, a few lingering WATERFOWL into January and February. NORTHERN PINTAIL, AMERICAN WIGEON and RED-BREASTED MERGANSER were among the less common. HARLEQUIN DUCK settled into the Rideau River near Hurdman and, unusually, lingered until early May. However, this species was only seen once in the fall, in November at Deschenes. BARROW'S GOLDENEYE was a fixture at Hurdman until early April, but was tougher to find that fall.

All that was fairly typical, but the major thaw in late February was not. As a result, an unusually large and early influx of WATERBIRDS produced, in a few cases, either the earliest record or at least the earliest for many years. SNOW GEESE arrived in large numbers in multiple locations, and GREATER WHITE-FRONTED and CACKLING GEESE in Kanata may have been our earliest. Near Carleton Place, TRUMPETER SWANS, RUDDY DUCKS and RING-NECKED DUCKS were some unusual early arrivals in late February.

These early arrivals vacated the region when cold returned in March, and the WATERFOWL returned at about their usual time in early April. The SNOW GEESE flocks in the east at Bourget peaked at "only" about 15,000 on April 13. ROSS'S and GREATER WHITE-FRONTED GEESE (as late as early June in Luskville), as usual, were elusive with scattered reports, while a small group of TUNDRA SWANS were fairly conspicuous as they stuck around for a few days in early April on Milton Road. The fall saw the usual scattered reports of ROSS'S and GREATER WHITE-FRONTED GEESE through to early December. In late November, there was an unusual sighting of two *wild* MUTE SWANS at the Giroux Road ponds.

Among the DUCKS, the star was a small flock of three KING EIDER, seen briefly at Andrew Haydon Park in late November. There were two sightings of CANVASBACK in early April, but the one at Shirley's Bay in late October was gracious enough to stick around for a little while. EURASIAN WIGEON was "gettable" in early October at Baie

Noire, and one was seen across the river in Ontario later that month. Other notable sightings were a late SURF SCOTER at Deschenes in early June.

Among the GREBES, a WESTERN GREBE in the Deschenes rapids in early June was probably our first spring record, and certainly the first that was cooperative enough to stick around in the same spot for most of the afternoon.

GAME BIRDS

GRAY PARTRIDGE were found with any regularity only in the area of a new housing development near Cope Drive, and then mostly early in the year.

WADERS

A GLOSSY/WHITE-FACED IBIS at Innis point in early May was the most notable in this group. A very early GREAT BLUE HERON was seen in late February during the thaw. A LEAST BITTERN was somewhat reliable at Constance Creek in late May-early June, and another somewhat reliable one was seen along the Carp River in late August-early September. Also noteworthy was a BLACK-CROWNED NIGHT-HERON that lingered in the Cope Drive area until the end of December.

Least Bittern in Carp, August 2017. Photo by Howard Morrison.

VULTURES, HAWKS AND FALCONS

A GYRFALCON put on quite a performance in late February near Carleton Place. A different bird was seen occasionally south of Kanata for a few weeks at about the same time, and one was seen in Britannia in late November. Aside from this, all the regular species were seen at the regular times and places, with the exception of a late ROUGH-LEGGED HAWK which lingered in the Greenbank Road area until the end of May.

MARSH AND SHOREBIRDS

Twenty-eight species of SHOREBIRD were seen in the region this year. The best by far was a WILLET at Embrun in late May, our first sighting in quite a few years. The record rainfall meant that the Shirley's Bay mudflats never really appeared, so it was a real struggle at times to find birds; the Carp River reclamation area had to serve as a kind of next best substitute. A HUDSONIAN GODWIT was there for a few weeks in October. WILSON'S PHALAROPE was in a flooded field on Greenbank in late May and in Embrun in August. An AMERICAN GOLDEN PLOVER near Antrim in late April was an unusually early record. A few RUDDY TURNSTONES were seen in June in spite of the high water levels. A LONG-BILLED DOWITCHER was at a storm outlet in Kanata in late September. There were two brief sightings of WHIMBREL, one in late May and a very late one in October. PURPLE SANDPIPER was quite difficult to see, as usual. There were a few brief sightings of this species in October and November.

JAEGERS, GULLS, TERNS AND OTHER SEA BIRDS

There was a good selection of GULL rarities this year. It started with a LAUGHING GULL near Richmond in late April, which stayed most of the day. FRANKLIN'S GULL put in a good show at Britannia Point in early June, but the LITTLE GULL at Deschenes in late July and the SABINE'S GULL at Shirley's Bay in late September unfortunately had only single sightings. A PARASITIC JAEGER was extremely cooperative for several weeks near Andrew Haydon Park between late September and early October. ARCTIC TERNS put in their usual showing, although they were harder to get at Britannia Point this year. A few actually showed up at the Moodie Drive Ponds. A BLACK TERN was seen in early September, and both CASPIAN and COMMON TERNS lingered until early October.

Some other excellent birds in this group were seen. WHITE PELICANS were seen flying over Britannia in late May, and down the Ottawa River near Rockcliffe via Gatineau in early June.

Ottawa had a bit of a taste of the ocean this fall. An unidentified ALCID seen on the Ottawa River in late October may have been the RAZORBILL seen at Constance Bay and Andrew Haydon Park for a few days in late October/ early November. A NORTHERN GANNET was seen flying east at Constance Bay in early November and disappeared somewhere east of Andrew Haydon Park. Another unidentified large ALCID was seen on the Ottawa River in late November.

CUCKOOS, OWLS, NIGHTJARS, HUMMINGBIRDS

YELLOW-BILLED CUCKOOS were a little more dependable this year at a few spots near Dunrobin until July. They were also regular at the Champlain Lookout in mid-June. A late one was in Val-des-Monts in early October.

Nine species of OWLS were seen in the region this year. Most interesting was a mini-invasion of GREAT GRAY OWLS starting in late January until late March. Dozens were seen all over the region and beyond. Aside from two other isolated sightings, a BOREAL OWL was perched on a light fixture in Sandy Hill for an entire day in early March and seen by a number of people. A SHORT-EARED OWL was seen in Carp in November, and late in the year in the Luskville area.

Yellow-billed Cuckoo on Thomas Dolan Parkway, June 2017. Photo by Martha Burchat.

An ANNA'S HUMMINGBIRD in Carleton Place for several weeks in November may have been the best bird of the year. Not only was it a regional first, but the first "gettable" one in Ontario, bringing in birders from all over Ontario.

Female Anna's Hummingbird in Carleton Place, November 2017. Photo by Jacques Bouvier.

WOODPECKERS

There were a few highlights among the WOODPECKERS. An early BLACK-BACKED WOODPECKER was a surprise in Britannia in mid-September, but neither it nor a few other individuals spotted later in the year were ever seen a second time.

A RED-BELLIED WOODPECKER put on a good showing in the Fallowfield area early in the year and in the Luskville area in late December, but otherwise there were no consistent or dependable locations.

A YELLOW-BELLIED SAPSUCKER lingered late into November at the Arboretum.

FLYCATCHERS

It was a mainly normal year again for this group. As always, EASTERN PHOEBE was the first to arrive in late March, and the last was a very late one in mid-November. Both OLIVE-SIDED and YELLOW-BELLIED FLYCATCHERS were rather tough to find. An EASTERN WOOD-PEWEE at Petrie Island in early October was a bit late.

VIREOS, SWALLOWS, TITMICE, WRENS, GNATCATCHERS, CORVIDS, SHRIKES

YELLOW-THROATED VIREO put in only a few brief appearances this year. SWALLOWS arrived and left at the usual time with the exception of a very late TREE SWALLOW in late October. A CAVE SWALLOW in Almonte in early November was the first appearance of this species in several years and the first in Lanark County. The TUFTED TITMOUSE in the Quyon area from last year stuck around for some time, and another was also in Fitzroy Harbour in the early part of the year. Four BOREAL CHICKADEES were seen in Gatineau Park in early January, but that was the only sighting.

A BLUE-GRAY GNATCATCHER was in Aylmer in mid-August, long enough to be re-found by several parties. Other than that there were only a few scattered sightings. A late RUBY-CROWNED KINGLET was in Aylmer in early December.

The usual five species of WREN were seen. A CAROLINA WREN was in the Carlington area for a few months in the new year, but for the rest of the year it was hard to find. SEDGE WREN had one reliable spot near Richmond for a number of weeks, while WINTER WREN was only notable for a few appearances in the winter.

The first recent sighting of LOGGERHEAD SHRIKE was in April near Blakeney.

The first CANADA JAY (formerly GRAY JAY) sightings in recent years were in Larose forest on January 2 and in Gatineau and Quyon in mid-February, but they were, unfortunately, isolated ones.

THRUSHES, MIMIDS

Birds in the group were notable for a number of late sightings, all in Britannia:

1. A SWAINSON'S THRUSH in early November.
2. A BROWN THRASHER until late November.
3. A GRAY CATBIRD until late December.

A few EASTERN BLUEBIRDS overwintered in Kanata and the Luskville area. AMERICAN ROBINS on the Christmas bird counts were in greatly reduced numbers after last year's peak. There were the usual few isolated sightings of NORTHERN MOCKINGBIRD plus one at Britannia in the spring which was quite "cooperative" for several weeks. BOHEMIAN WAXWINGS were reasonably common early in the year but were virtually non-existent the next fall/winter.

Bohemian Waxwing in Carleton Heights, March 2017. Photo by Brian Mortimer.

TANAGERS, GROSBEAKS, BLACKBIRDS

A WESTERN TANAGER was at a private residence in Kemptville for over a week in early May, but was unfortunately not able to be seen by many as a result. This bird appears to be the first record for Leeds-Grenville County. Also notable was a ROSE-BREASTED GROSBEAK at a feeder in Carleton Place in early January. The other notable bird in this group was a YELLOW-HEADED BLACKBIRD at the Trail Road landfill for several weeks starting in early November. However, it was often very hard to find.

SPARROWS, FINCHES

Few of the WINTER FINCHES were plentiful this year, not early nor even late in the year, despite a favourable forecast in the fall. PINE SISKINS were around in modest numbers, though. The northern forests were the best but still not very good. There was one spot on the Eardley-Masham Road in Gatineau Park where a few RED CROSSBILLS were dependable. HOARY REDPOLL was not seen this year. EVENING GROSBEAK was most reliable in Larose Forest, but was easy to miss.

SPARROWS were notable only in a number of early and late sightings:

1. A field near Dunrobin had many LAPLAND LONGSPURS into mid-May.
2. At least two CHIPPING SPARROWS were at a feeder in Carleton Place in January-March.
3. CHIPPING, VESPER, and SAVANNAH SPARROWS were seen in December.
4. A NELSON'S SPARROW was seen in Kanata in early December, our first winter sighting.

WARBLERS

It was a good year for WARBLERS, at least as a whole. YELLOW-RUMPED, PINE (the first on the 8th), and PALM WARBLERS arrived in the second week of April. The last WARBLER was seen on December 12.

Prothonotary Warbler in Britannia, September 2017. Photo by Nina Stavlund.

Mostly all the regular 25 species were seen at the usual times and places, but some of the extras were really special birds. We ended up with 30 species for the region. There were sightings of CERULEAN WARBLER only a few times in Gatineau in May, a single sighting of BLUE-WINGED WARBLER in Kanata in mid-June, and a single sighting of CONNECTICUT WARBLER in the Mer Bleue area in early June. In late September, a PROTHONOTARY WARBLER was found in Britannia, and was kind enough to stick around and be seen the next day. However, the real star was a BLACK-THROATED GRAY WARBLER in Britannia, which first showed up in early November, and after being elusive for a few days, was quite "gettable" until December 12. It was probably one of the most photographed birds of the year, and was clearly attempting to overwinter.

Also of interest were:

1. A late NASHVILLE WARBLER in Britannia for about two weeks in mid-November.
2. An early TENNESSEE WARBLER (a window strike) in late April.

Rough-legged Hawk

Linda Jeays

What price a black-wristed hawk
hovering in brittle January sunlight?

What price the airborne predator
set against a clear blue sky,
above wide snow-covered fields
etched with tree silhouettes?

What price when the dark wing-tips
and extended talons dip swiftly
to earth, vanishing from human eyes
in the hunger-driven need for prey?

What price the sudden flight upwards,
a glimpse of the hawk's banded tail,
ruffled feathers and ruthless beak,
as the easy burden is carried away?

What price the magnificent spectacle?
A death is the high price to be paid.

OFNC
Awards Night

Saturday, February 23, 2019
7:00 p.m.
St. Basil's Parish Church
940 Rex Avenue, Ottawa

(GPS Address: 899 Maitland Avenue)
This is on the east side of Maitland Ave., 200 m north of the Queensway.
Or take bus # 85 (along Carling Ave.) and get off at Maitland Ave. Walk 500 m south along Maitland (towards the Queensway). St. Basil's is on the left (east side).

- Celebrate this year's award winners.
- Wine & Cheese Social: enjoy wines, non-alcoholic punch, cheese & crackers, fruits & vegetables, desserts, tea & coffee.
- Take part in our Despotic Nature Quiz.
- **Digital Photo Contest:** Please send up to 3 images to ofncphotocontest@wray-canada.com by February 10, 2019. Photos should be nature-themed and taken by you in 2018, in eastern Ontario or western Quebec. There will be small prizes; you have to be present to win.
- We invite Macoun Field Club members and children (under 18 years) to bring and present natural history displays.
- **ADMISSION: Free**

Coming Events

PLEASE NOTE:

The OFNC website (*ofnc.ca*) contains the most up-to-date information on events. Please check it regularly for additions or changes to events. The Club's Facebook page (*www.facebook.com/groups/379992938552/*) and Twitter account (*@OttawaFieldNat*) may also be used to announce last-minute changes to events.

Several events require participants to register. Please consult the details in the event description.

We expect to have several more events to offer that could not be finalized prior to the publication deadline for *Trail & Landscape*. These will be announced as soon as possible on the website. Other weather- and year-dependent events can only be announced at the last minute, via the website, Facebook and Twitter.

ALL OUTINGS:

Field trips to natural areas in our region and beyond take place all year round. OFNC events are for members only. Prospective members with interest in attending should contact the trip leader in advance. For some events, participation is limited and members will be given priority. All participants will be asked to sign a waiver. Times given for events are departure times. Please arrive earlier, as leaders start promptly. If you need a ride, please contact the leader.

Please bring a lunch on full-day trips and dress according to the weather forecast and activity. Please always wear long pants and closed-toe shoes. Binoculars and/or spotting scopes are essential on all birding trips. Unless otherwise stated, transportation will be by carpool.

MONTHLY MEETINGS:

Our monthly meetings are held in the K.W. Neatby Building, Salon B, at 960 Carling Avenue. There is ample free parking in the lot on the west side of Maple Drive by Carling Ave., immediately to the east of the main entrance to the Neatby Building. Monthly meetings are open to the general public.

EVENTS ORIENTED TO ALL AGES:

Kids are welcome on all of our trips. We highlight some hikes as "oriented to all ages" as these are most likely to be enjoyed by typical children. Depending on your child(ren)'s interests and stamina, please feel free to bring them along on any events. For events tailored to kids, check out the Macoun Field Club (*http://ofnc.ca/programs/macoun-field-club*).

Monthly Meeting

140th ANNUAL BUSINESS MEETING

Tuesday January 8

7:00 p.m. Social

7:30 p.m. Formal program

Location: Salon B, K.W. Neatby Building, Central Experimental Farm, 960 Carling Avenue

Description: The Board of Directors for 2019 will be elected at this meeting. There will be a brief review of the activities in 2018 and a statement of the Club's finances will be given. This is an opportunity to meet most of the Club's executives and the chairs of the various committees and to find out what makes your Club tick. An abbreviated presentation (details TBA) will follow the voting.

Saturday January 12
9:30 a.m. - 11:30 a.m.

MUD LAKE ALL THE (OTHER) WAY AROUND

Leader: Bev McBride
Meet: Britannia Conservation Area, by the small parking lot where Cassells St. enters the water filtration plant.
Description: We'll have a leisurely stroll all the way around Mud Lake to contemplate whatever items of natural history interest come to our attention. We'll go in the opposite direction from last year. This is a good event for people who aren't sure how to find their way around the pond. Warm, waterproof footwear recommended. Trails could be icy. Consider bringing a walking stick or trekking pole.

Saturday January 19
7:00 p.m. to 10:00 p.m.
oriented to all ages

6th ANNUAL MEMBERS' PHOTOGRAPHY NIGHT

Leader: Barry Cottam
Location: Villagia Retirement Residence,
480 Metcalfe Street, at Isabella (previously The Palisades)
Description: If you take natural history photos, this is your opportunity to share some of your images with fellow members. The mix of topics and voices makes for an enjoyable evening. Contributions may be 7-10 minutes long. We can handle most digital presentations (images on a flash-drive), and even conventional slides (with some warning please). We encourage presenters to speak about their images. Please contact Barry Cottam (b.cottam@rogers.com) so that we can organize the presentations.

Cuban Tody, Cuba, by Jakob Mueller.

Red Spruce in the Greenbelt, by Owen Clarkin.

Sunday January 20
10:00 a.m. to 1:00 p.m.

RED SPRUCE IN OTTAWA'S GREENBELT

Leader: Owen Clarkin
Meet: TBA; please check ofnc.ca
Description: Mid-winter is an ideal time to observe our evergreen trees. This hike will showcase many of Ottawa's conifers with focus on the regionally significant population of Red Spruce (*Picea rubens*) in Ottawa's eastern Greenbelt, and associated flora. Due to the lack of a dedicated trail system and anticipated snow cover, this event will require endurance and some hiking dexterity on the part of attendees. Snowshoes are recommended. This is a snow or shine event: however, if the weather is extremely cold by January's standards or stormy, the event will be cancelled.

Saturday January 26 (Bad weather date: February 2)
8:00 a.m. to 12:00 p.m.

BIRDING IN THE BLEAK MID-WINTER – SEARCHING FOR LIFE ON THE RIDEAU RIVER

Leader: Greg Zbitnew
Meet: East side of the Rideau River, just under the Queensway (see description for parking)
Description: Birding is pretty much at its lowest ebb in late January-early February, but where there is running water, there is life. A number of spots on the Rideau River are open year-round, and this is a magnet for over-wintering ducks, including, we hope, Barrow's Goldeneye. The narrowness of the river virtually guarantees good looks. Parts of the Rideau River valley are surprisingly wild even when passing through a heavily urbanized area, and the combination of open water and the urban heat island can be favourable for passerines and associated birds of prey.

We will meet on the east side of the Rideau River, just under the Queensway, at 8:00 a.m. This is a few 100 meters south of the south end of North River Road, where parking is available. To get there, go to the Vanier parkway, turn west on Queen Mary, and south (left) on North River Road. Then walk south along the river until you reach the overpass. We will visit the open water and nearby woods here, the Rideau River at Donald Street (Adàwe Crossing), Billings Bridge, and if time and enthusiasm permit, Carleton University and places even farther south.

Expect a reasonable amount of walking on snow/ice and cold temperatures. The trip nominally will finish at 12 noon. In the event of inclement weather, which would be snow and or wind making travel difficult or severely hampering visibility, the trip will be rescheduled for February 2nd. Please pre-register by January 25 by email to bm.ofnevents@gmail.com.

Sunday January 27
8:00 a.m. to 11:30 a.m.

WINTER PHOTOGRAPHY WORKSHOP

Leader: Joshua McCullough
Meet: Main parking lot at the Fletcher Wildlife Garden
Description: We will be slowly walking around the Fletcher Wildlife Garden and Arboretum, doing photography. Expect to be outside for three hours. Wear sturdy winter boots and winter clothing. A kneeling pad helps to keep knees dry and warm when doing photography in the snow. We can discuss camera settings, and how to use the various modes including manual mode, techniques for getting sharp images of birds and other subjects in bright snowy conditions and general photography. A warm drink in a thermos and snacks will help keep you warm and hydrated. Meet back at the FWG main building at 11 a.m. to warm up inside and/or talk about the morning's photos!
Tripod or Monopod recommended but not necessary.

Sunday January 27
9:00 a.m. to 12:00 p.m.

BIRDING ALTA VISTA

Leader: Richard Knapton
Meet: Billings Bridge Shopping Centre parking lot near the McDonald's
Description: Join Richard to explore for birds in Ottawa's Alta Vista neighbourhood. The area includes open corridors with wintering allotment gardens, wooded parks, neighbourhoods with fruit-bearing shrubs and trees and Rideau River frontage.
Be prepared for walking and for keeping warm. Please pre-register by January 25 by email to bm.ofnevents@gmail.com.

Sunday February 10
10:00 a.m. to 1:00 p.m.

ORLEANS RAVINE FOREST TOUR

Leader: Owen Clarkin
Meet: Trail entrance near intersection of Belcastle Court and Rivercrest Drive; 45.452806, -75.547278
Description: This winter event will explore one of several rich, mature ravine forests in Orleans. This forest contains one of the most extensive stands of Hemlock (*Tsuga canadensis*) in the City of Ottawa, and despite the current large size of the mature trees to be found in 2019, we will explore evidence that even larger trees were present in the original forest many decades ago. This introduction to the forest systems of Orleans may result in you wanting to return to catch the spring and summer season! Due to sloping terrain and anticipated snow cover, this event will require endurance and some hiking dexterity on the part of attendees. Snowshoes are recommended. This is a snow or shine event: however, if the weather is extremely cold by February's standards or stormy, the event will be cancelled.

Looking down the Orleans Ravine, by Owen Clarkin.

Monthly Meeting

TRACKING FISH IN THE GREAT LAKES WATERSHED

Tuesday February 12

7:00 p.m. Social

7:30 p.m. Formal program

Speaker: Graham Raby

Location: Salon B, K.W. Neatby Building, Central Experimental Farm, 960 Carling Avenue

Description: Animal behaviour is fascinating, amusing and mysterious, but studying the behaviour of animals in the wild is often a challenge. Observing wild fish behaviour is uniquely challenging because they live out of our view, in a vast underwater world. Fishes, and their behaviours, are incredibly diverse, with over 26,000 species worldwide including over 150 in Ontario. Over the past 10 years, the use of electronic tags that transmit or log data about individual animals has exploded in popularity, allowing scientists to track migratory behaviours and reveal where, when, why and how fishes move. Nowhere is this truer than in Ontario. Fish tracking studies are allowing us to gain new insights into the natural history of important fishes in the Great Lakes and in smaller inland waters, including those in the Ottawa area. These scientific discoveries about the behaviour of wild fishes are in turn informing conservation and habitat management.

Graham is a post-doctoral research fellow with the Great Lakes Institute for Environmental Research at the University of Windsor but he calls Ottawa home and did his Ph.D. at Carleton University. In this talk, he will share stories about some of the fish tracking research going on in the Great Lakes and in the Ottawa area.

Saturday February 23 (Backup date: Sunday February 24)
9:30 a.m. to 12 p.m.

"WINTER MAGIC" PHOTOGRAPHY WALK AT MUD LAKE

Leader: Nina Stavlund
Meet: Cassels Street, by the small parking lot just before the filtration plant
Description: Let's spend a couple of hours at Mud Lake, looking for anything we can photograph, from chickadees to magical winter scenes. We will hike portions of the main trail at Mud Lake, starting at Cassels Street where we will first look for geese and ducks to photograph. On the trail, we expect to see nuthatches, sparrows, squirrels and perhaps finches. We will also look for suitable scenery and landscape to photograph, including close-up pictures of nature covered in snow and of the snow itself. During this walk, Nina will point out the various photo-ops as we encounter them and will give hints and tips on how to do photography during the winter season. This event will suit those who would like to practice winter photography and would like to come out with like-minded people for a walk in the beautiful surroundings of Mud Lake and Britannia Conservation Area.

Bring the equipment you would like to use: DSLR and mirrorless cameras with various lenses, point & shoots or even just your cell phone. Bring a tripod if you don't mind carrying it. Most importantly, dress in lots of layers, wear a tuque, gloves and warm boots. Bring something hot to drink and a snack if you want. The walk will be postponed to the following day if the weather is severe (heavy snowfall, strong winds or minus 20). Contact the leader if you have any questions: TonysAlwaysAnAdventure@gmail.com.

Bohemian Waxwing, by Nina Stavlund.

Saturday February 23
7:00 p.m. to 10:00 p.m.

OFNC AWARDS NIGHT

Location: St. Basil's Parish Church, 940 Rex Avenue, Ottawa.
Description: Join us for some fun at our annual wine and cheese party and celebrate with the honoured winners of our Annual Awards. See details on page 50.

Monthly Meeting

WINTER WILDLIFE IN JAPAN

Tuesday March 12
7:00 p.m. Social
7:30 p.m. Formal program
Speaker: Roy John
Location: Salon B, K.W. Neatby Building, Central Experimental Farm, 960 Carling Avenue
Description: Join Roy and Stephanie as they make a winter visit to the ancient kingdom of Japan to search for the graceful, dancing Japanese Crane (or Red-crowned Crane, *Grus japonensis*). One of the rarest crane species, it is revered as a symbol of luck, longevity, and fidelity. In all, they saw five species of crane. They also looked for birds of prey, especially the huge Steller's Sea Eagle, as well as rare owls, among the more than 100 bird species observed. Ride with them on the Shinkansen (Bullet Train) between Tokyo and Nagano to visit with the Japanese Macaques (Snow Monkeys) as they enjoy a bath in hot, volcanic water. As they went from Kyushu Island in the south to the northern reaches of Hokkaido, they enjoyed not only wildlife but also a wonderful slice of Japanese culture and cuisine.

Sunday March 17
9:00 a.m. to 12:00 p.m.

BIRDING ALONG THE RIDEAU RIVER IN THE CITY

Leader: Richard Knapton
Meet: At the end of Somerset St. East, in Strathcona Park by the Adàwe Crossing Bridge
Description: Join Richard for late-winter birding along the Rideau River. Explore the river's open waters and adjacent parks and neighbourhoods for over-wintering and resident water and land species. Maybe we'll find some signs of spring!
Please pre-register by March 15 by email to bm.ofnevents@gmail.com.

ANY ARTICLES FOR *TRAIL & LANDSCAPE?*

Have you been on an interesting field trip or made some unusual observations? Write up your thoughts and send them to *Trail & Landscape*!

DEADLINE: Material for the April-June issue must be in the editor's hands by **February 1, 2019**. Send your articles to:

Annie Bélair

annie.TandL@gmail.com

613-832-7802

Vous pouvez m'écrire en français également.

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